

# TECHNOLOGY

REVIEW

*December 1955*

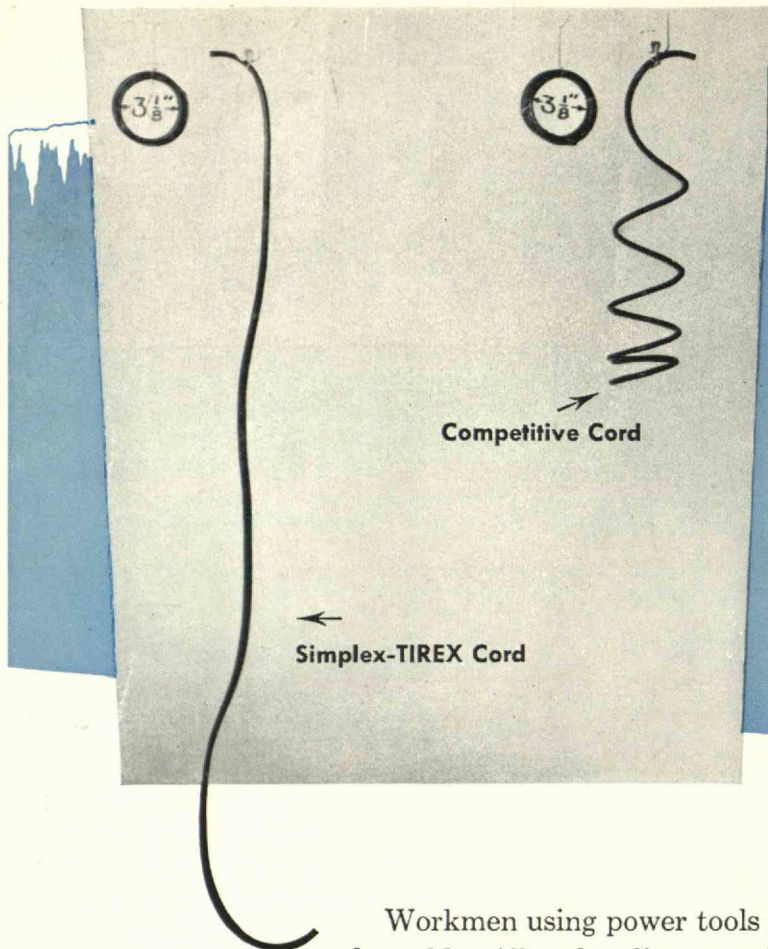


# technology review

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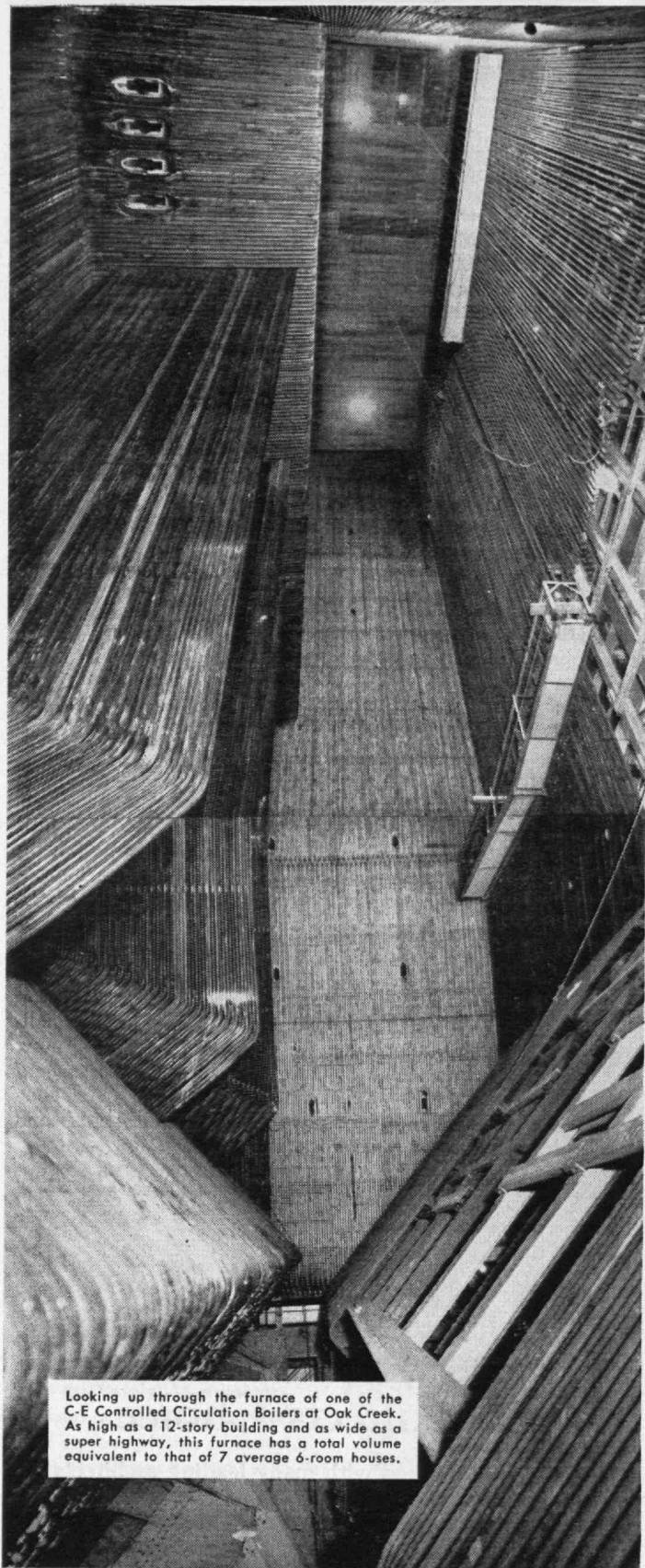
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Looking up through the furnace of one of the C-E Controlled Circulation Boilers at Oak Creek. As high as a 12-story building and as wide as a super highway, this furnace has a total volume equivalent to that of 7 average 6-room houses.

## Wisconsin Electric Power Company

### A STORY OF PIONEERING

In the annals of America's great industrial achievements, a few names stand out. They are the pioneers, the companies whose work has advanced technology in major steps. Such a company in the field of power generation is the Wisconsin Electric Power Company. Its first big pioneering step was taken 35 years ago when it built . . .

#### A power plant that made Milwaukee famous

In 1920, the use of pulverized coal as a fuel for boilers was virtually unknown in the utility industry. Wisconsin Electric, after 5 years of development work in an older plant, took the bold step of designing a large new power station (the Lakeside Station) for the exclusive use of pulverized coal. Lakeside not only proved the practicability of pulverized coal but became the world's most efficient power station. Power engineers from all parts of the country and abroad came to Milwaukee to observe and learn. Pulverized coal made a major contribution to the economy of power generation and has long since become the universal method of burning coal in electric power stations.

Wisconsin Electric took its next big forward step in 1930 when it started construction of its Port Washington Station.

#### Port Washington set new efficiency record

Port Washington was unique among American power stations in that it not only set a new efficiency record during its first years of operation but maintained its position as *the world's most efficient power station* for 13 years. It had other claims to fame as well. Its boilers were the largest high-pressure boilers then built and established new reliability records in service.

#### And then came Oak Creek

Now Wisconsin Electric has erected another landmark on its "road of achievement" with its new Oak Creek Station, placed in service in late 1953. Oak Creek, like its famous predecessors in the Wisconsin system, introduces important innovations in design and is noteworthy among the outstanding power stations of today.

• • •

And what is Combustion Engineering's part in the Wisconsin Electric story? Just this. Combustion pioneered pulverized coal burning from the manufacturer's side, and designed and built all the pulverized coal equipment installed at Lakeside, Port Washington and Oak Creek. It supplied the boiler units installed in the Port Washington Station. And at Oak Creek, Wisconsin Electric now has in service two of Combustion's most advanced type of controlled circulation boilers, with a third being installed.

Wisconsin Electric, pursuing its forward looking policy, was among the first to recognize the special advantages of the controlled circulation boiler which, in the past five years, has achieved an acceptance by utilities never before accorded a basically new design.

B-856

## COMBUSTION ENGINEERING

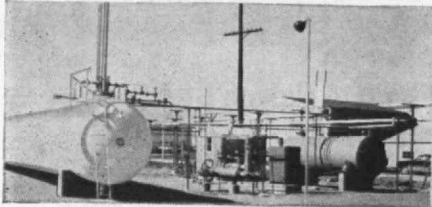
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## THE TABULAR VIEW

**Industrial Liaison.**—In operation since 1948, the M.I.T. Industrial Liaison Program, established to provide close technical contact between M.I.T. and industrial research, is described (page 87) by EUGENE B. SKOLNIKOFF, '49. Mr. Skolnikoff received the S.B. and S.M. degrees in 1950 (Course VI-A), then studied philosophy and economics as a Rhodes scholar at Oxford University from which he received the B.A. degree in 1952. He has spent two and one-half years with the Industrial Liaison Office at M.I.T.

**Excellence First.**—In "Engineering Education and National Spirit" (page 91), JULIUS A. STRATTON, '23, makes a strong case for that kind of engineering education that develops "personal responsibility... with ready willingness to minister to the public welfare." Dr. Stratton has had a distinguished career as professor of physics, member of the staff of the Radiation Laboratory, head of the Research Laboratory of Electronics, and since 1952 as vice-president and provost of M.I.T.

**Distaff Doings.**—Ever wonder what makes young ladies want to study at M.I.T.—how their technical training benefited them in later years? Answers to these and other interesting questions about Alumnae are given (page 94) from the women's point of view. The article on coeds summarizes the results of a survey made by the Registration Committee of the M.I.T. Women's Association in co-operation with the Office of the Dean of Students. For the preparation of this report, as well as for the article in this issue, The Review is indebted to: Ruth L. Bean, Assistant Dean of Students, and the following ladies who served as officers of the M.I.T. Women's Association when the survey was conducted in 1953: Mary E. Guinan, 2-44, President; Gladys P. Lyons, 6-45, Vice-president; Katherine S. (Mrs. Harold L.) Hazen, '28, Recording Secretary; Grace G. Farrell, '29, Treasurer.

**Good Riddance.**—Aided by widespread vaccination practices, medical science has virtually eliminated smallpox from the American scene. But, as JAMES A. TOBEY, '15, points out (page 97), this was not always so, and the disease was often a scourge in America. Dr. Tobey has achieved an outstanding career in public health and public health law.



Ward Baking Company, Merkle & Elberth, Architects

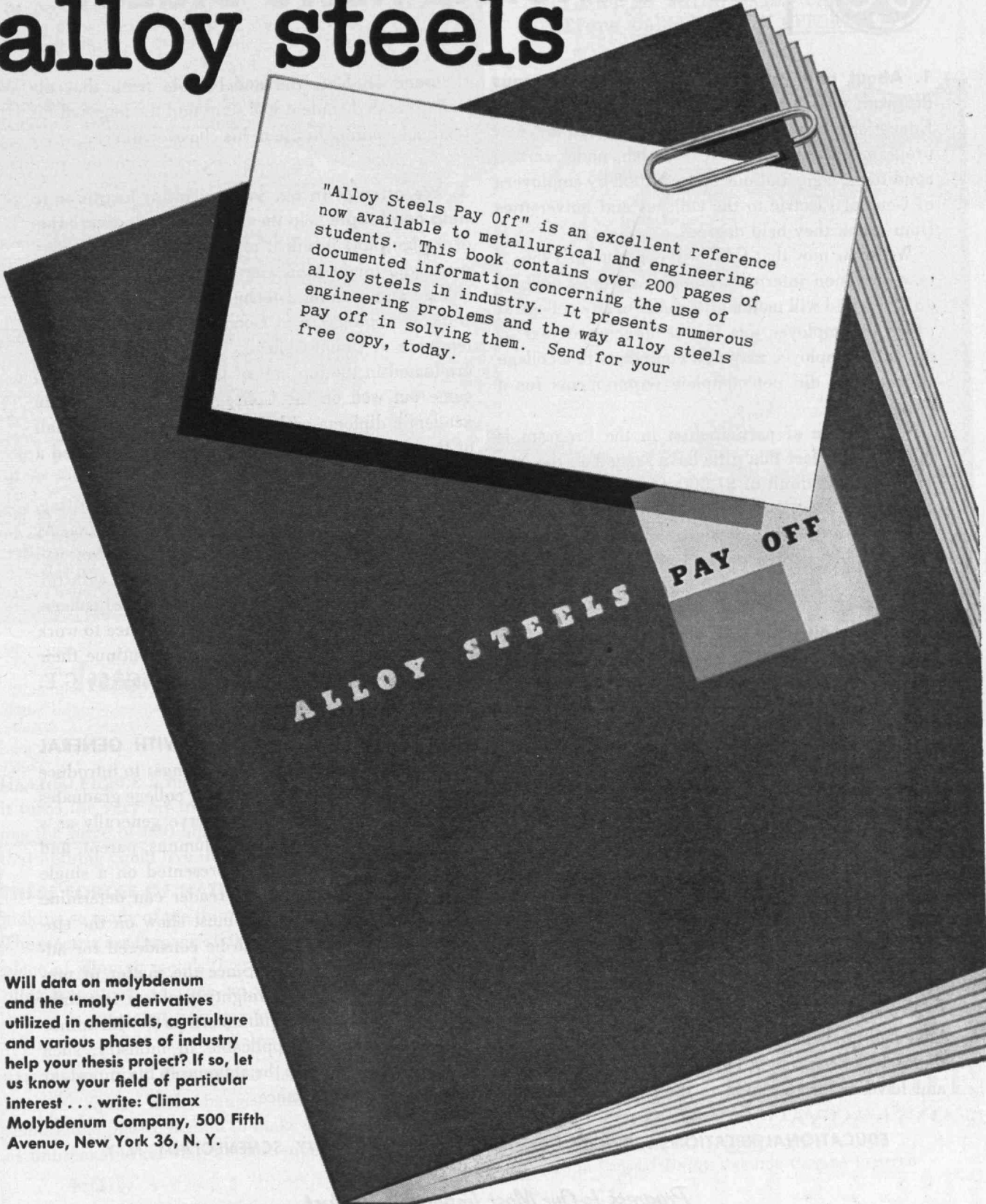
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# EDUCATIONAL NEWS DIGEST

**1. About one year ago a Corporate Alumnus Program was established** by the General Electric Educational and Charitable Fund. Through this new program, the Fund agreed to match, under certain conditions, contributions up to \$1,000 by employees of General Electric to the colleges and universities from which they held degrees.

We know now that CAP will continue in 1956. A new provision interprets *alumnus* as most colleges do: the Fund will match gifts made to any college at which an employee was *in attendance* one year or more. An employee may now contribute to a college at which he did not complete requirements for a degree.

Wide range of participation in the Program is shown by the fact that gifts have ranged all the way from \$1 to the limit of \$1,000. On October 1, there were 3,113 contributions to 285 colleges, totaling \$116,877; any alumnus who reads his mail knows that the modest gifts count as they never counted before.

\* \* \*

**2. A fifth university will start offering the G-E Fellowship Program** for high-school teachers in the summer of 1956; Syracuse University will conduct a program in science for 50 high-school teachers. This particular program—like those in science and math, in Union, RPI, Case, and Purdue—will be underwritten by General Electric from the time the teacher leaves home till he returns six weeks later. These five challenging programs are at graduate levels. Our participation also includes scheduled lectures and trips to plants and laboratories to hear and observe how mathematics and science are used in modern business.

The Teacher Fellowships Program began in 1945 at Union, and that summer there was but one session of 50 teachers. By now, approximately 1,350 teachers have had the benefit of these special programs, have themselves been taught by distinguished professors, and have in turn brought to their several hundred

thousand students the undebatable truth that the well-grounded student will soon find the pages of his textbook coming to life in his chosen career.

\* \* \*

**3. We attempt in our various plant locations to help our people help themselves.** Here's a variation of a plan, now in effect at Schenectady: 35 young men, who might otherwise have foregone going to college and earning a technical degree, are now at work as apprentices at General Electric and in attendance at Union College. These young men were graduated in the top half of their high-school class, came out well on the College Board tests, had an academic diploma with 16 full credits (almost half of them in English and math), and demonstrated a genuine desire for a college education.

These men are full-time apprentices in drafting, machining, pattern making, and metal founding. At the end of 8,000 hours of apprenticeship, they will have completed, after business hours, and with tuition paid by the Company, two full years of college. They may then apply for a leave of absence to work for a degree on a full-time basis, or continue their educations at night, still working full time for G.E.

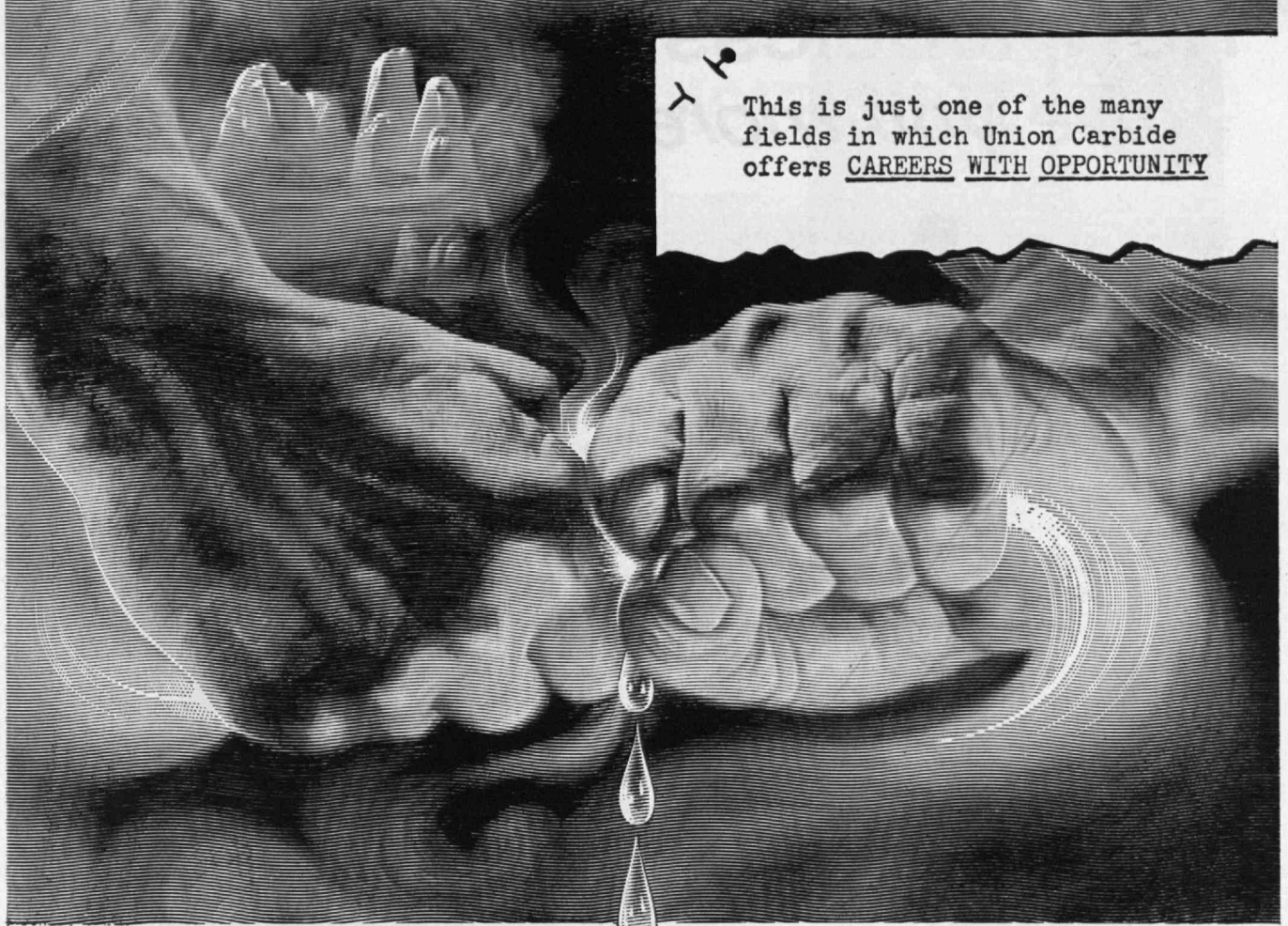
\* \* \*

**4. A new booklet, GROWING WITH GENERAL ELECTRIC,** is designed to do two things: to introduce General Electric's 10 Programs for college graduates to potential employees and to serve generally as a guidance tool in the hands of alumnus, parent, and instructor. Each Program is presented on a single page in such a way that the reader can determine immediately what "majors" must show on the student's record if he wishes to be considered for admission to that Program. Since the matter of prerequisites looms up as a mighty problem to youth, and since the stated requirements are, with minor variations, generally applicable in industry, such information should help the alumnus in his important function of youth guidance.

EDUCATIONAL RELATIONS SERVICES, GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y.

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**HEAT SO FIERCE** it makes steel boil . . . cold so intense it turns the very air to liquid . . . pressure so great it has the force of 600 hurricanes . . . space so “empty” that nothing could live in it.

**THESE FORCES OF NATURE** are used by industry in making so many of the things we take for granted today. The electric arc furnace—6,000 degrees hot—is the birth-place of alloying metals that go into stainless steel and other fine steels. Oxygen, so vital to medicine and industry, is extracted from air made liquid when cooled to more than 300 degrees below zero.

**ETHYLENE GAS SQUEEZED** under pressure of 15 tons per square inch changes into polyethylene. This remarkable plastic is used to make such familiar things as unbreakable nursing bottles, squeeze-spray contain-

ers, and transparent wrappings. Exposing natural gas to terrific pressures and the “nothingness” of vacuum have been key steps in making hundreds of new chemicals during the last 20 years.

**THESE ARE BUT A FEW** examples of how industrial scientists such as those of Union Carbide have discovered how to use the forces of nature to create the new processes and products necessary to America’s progress.

**STUDENTS AND STUDENT ADVISERS:** Learn more about career opportunities with Union Carbide in **ALLOYS, CARBONS, CHEMICALS, GASES, and PLASTICS.** Write for booklet H-2.

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# New Tubeless Suburbanites *give you more go in snow!*



See how the skier angles his skis to walk right up the slope. His ski edges cut into the snow in a "herringbone" pattern—let him climb that steep hill with a minimum of trouble.

Goodyear's great Suburbanites have the logical winter tread design. It works the same way as skis in the "herringbone." Four rows of sharp-edged cleats are



angled to bite into the snow—give you a surer grip on the road. This wide winter tread is made of 464 cleats with 1856 sharp edges. They dig in like claws for greater traction in snow and mud—a better grip on ice.

Don't let a surprise, heavy snowfall delay you. See your Goodyear dealer—get Suburbanites for your car today. Goodyear, Akron 16, Ohio.

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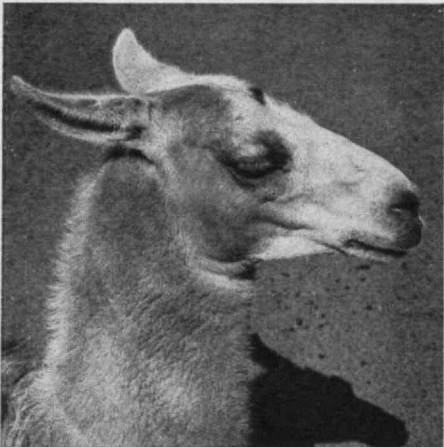
Look for this sign; there's a Goodyear dealer near you.

THE  
TECHNOLOGY  
REVIEW

TITLE REGISTERED, U. S. PATENT OFFICE

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H. Armstrong Roberts

"Oh, we make our own dormitory rules."

VOL. 58, NO. 2

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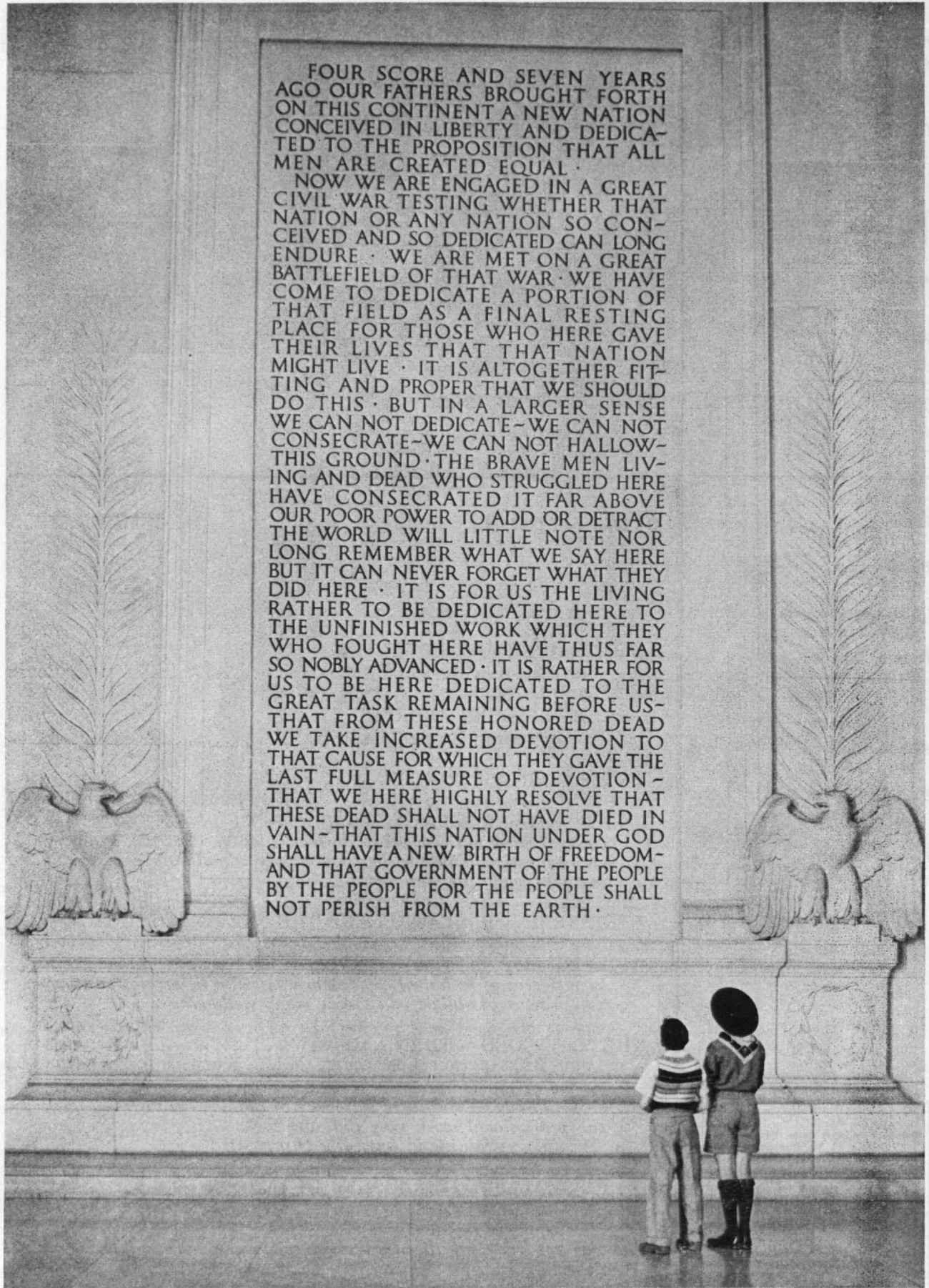
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FOUR SCORE AND SEVEN YEARS  
AGO OUR FATHERS BROUGHT FORTH  
ON THIS CONTINENT A NEW NATION  
CONCEIVED IN LIBERTY AND DEDICA-  
TED TO THE PROPOSITION THAT ALL  
MEN ARE CREATED EQUAL ·

NOW WE ARE ENGAGED IN A GREAT  
CIVIL WAR TESTING WHETHER THAT  
NATION OR ANY NATION SO CON-  
CEIVED AND SO DEDICATED CAN LONG  
ENDURE · WE ARE MET ON A GREAT  
BATTLEFIELD OF THAT WAR · WE HAVE  
COME TO DEDICATE A PORTION OF  
THAT FIELD AS A FINAL RESTING  
PLACE FOR THOSE WHO HERE GAVE  
THEIR LIVES THAT THAT NATION  
MIGHT LIVE · IT IS ALTOGETHER FIT-  
TING AND PROPER THAT WE SHOULD  
DO THIS · BUT IN A LARGER SENSE  
WE CAN NOT DEDICATE - WE CAN NOT  
CONSECRATE - WE CAN NOT HALLOW -  
THIS GROUND · THE BRAVE MEN LIV-  
ING AND DEAD WHO STRUGGLED HERE  
HAVE CONSECRATED IT FAR ABOVE  
OUR POOR POWER TO ADD OR DETRACT  
THE WORLD WILL LITTLE NOTE NOR  
LONG REMEMBER WHAT WE SAY HERE  
BUT IT CAN NEVER FORGET WHAT THEY  
DID HERE · IT IS FOR US THE LIVING  
RATHER TO BE DEDICATED HERE TO  
THE UNFINISHED WORK WHICH THEY  
WHO FOUGHT HERE HAVE THUS FAR  
SO NOBLY ADVANCED · IT IS RATHER  
FOR US TO BE HERE DEDICATED TO THE  
GREAT TASK REMAINING BEFORE US -  
THAT FROM THESE HONORED DEAD  
WE TAKE INCREASED DEVOTION TO  
THAT CAUSE FOR WHICH THEY GAVE THE  
LAST FULL MEASURE OF DEVOTION -  
THAT WE HERE HIGHLY RESOLVE THAT  
THESE DEAD SHALL NOT HAVE DIED IN  
VAIN - THAT THIS NATION UNDER GOD  
SHALL HAVE A NEW BIRTH OF FREEDOM  
AND THAT GOVERNMENT OF THE PEOPLE  
BY THE PEOPLE FOR THE PEOPLE SHALL  
NOT PERISH FROM THE EARTH ·

Ewing Galloway, N.Y.

### *The Gettysburg Address*

A classic in American literature, Abraham Lincoln's famous address delivered on November 19, 1863, is shown here as it appears on the south wall of the Lincoln Memorial at the nation's capital in Washington, D.C.

# THE TECHNOLOGY REVIEW

Vol. 58, No. 2



December, 1955

## The Trend of Affairs

### *Science — A Force for Peace*

SCIENCE is both a deterrent to war and a force for peace, James R. Killian, Jr., '26, President of M.I.T., declared at a luncheon of the Nutrition Foundation at the Plaza Hotel in New York on November 2. But science also faces its own hazards. "The hazard we face is that science will be so identified with destruction and so hemmed in by security considerations that its real significance will be lost, its ranks weakened, and its creativity diminished," Dr. Killian said.

"If American science is to continue to prosper, if it is to continue to attract to it its proper complement of creative and gifted minds, scientists must combat the notions that science and engineering are incompatible with the great humanities disciplines, and that they are narrowly materialistic and destructive of human values."

By increasing the power of weapons, President Killian asserted, science "may be helping . . . to convince the nations of the world that total war is no longer a possible instrument of national policy for anybody." But at the same time it is improving man's "health, his standard of living, his standard of understanding, and his opportunities for spiritual growth." Science is therefore a force for peace, declared Dr. Killian, who added:

Our great problem and opportunity now are to let science be its true self and thus to realize its full potential for good. We live in a period marked by both subtle and gross assaults on intellectual life. The whole domain of science has been represented as endangering man's noble aims and ends. In the face of the practical responsibilities which rest in science for our security and our material welfare, it is all too easy for people to become bemused by the sophistry that science is inimical to the spiritual ends of life and for them to fail to understand that instead, it is one of man's most powerful and noble

means for searching out truth and augmenting man's dignity by augmenting his understanding.

Scientists have an obligation to make this true character of science better understood and to do so, not by arrogant advocacy of science and technology as the only means to increase our understanding and well-being, but by the balanced and tolerant presentation of the scientific spirit as one of the great and powerful methods by which man can increase his knowledge and understanding and still remain humble and ennobled before the wonder and majesty of what he does not understand.

President Killian's important message may appear to be quite unnecessary and superfluous to readers of *The Review*. The public at large, however, can hardly be expected to be familiar with the general aims and tenets of science.

### *One Man's Meat*

IT is much less expensive for mankind to eat directly plant crops such as vegetables, fruits, or grains, rather than to feed the plant crops to animals and then consume the animals' meat, milk, or eggs. That is why in areas where poverty is prevalent, as in sections of the Orient, the people eat very little animal foods. Unfortunately dietaries consisting mainly of plant foods not only lack the gustatory delights provided by meat, fowl, and dairy dishes but also lack nutritional quality. For animal foods provide, in addition to calories, proteins of high quality as well as abundant beneficial minerals and vitamins.

Although all farm animals are quite wasteful in their conversion of plant foods to animal foods suitable for human consumption, some are less so than others. Pigs are the most efficient meat-making machines. They convert about 20 per cent of the feed they eat (measured in terms of calories) into parts of their bodies edible by mankind. In contrast, on this basis, steers and lambs convert to food only



about 4 per cent of the feed they consume. Hence the housewife finds that pork costs less than beef or lamb. The price differential she encounters is, however, much smaller than the fivefold difference in efficiency of meat production just stated. This is true because pig rations are more expensive than steer or lamb rations. The pig, a nonruminant, must be provided with feeds, such as corn, that could be eaten directly by the human being and hence have substantial market value. But cattle and sheep are ruminants; they thrive on rations largely useless as human food, such as straw, by-products from human food production such as grain mill offal, or grass grazed from land too infertile, arid, or rough to support any crop the human being can eat.

Efficient conversion of animal feed to human food also explains why milk and its products are so economical. The dairy cow does require somewhat more feed than the pig to produce a given amount of human food—nine and three-tenths pounds of feed for milk as against seven and seven-tenths pounds for pork to produce enough calories to maintain a human being for a day. But the dairy cow thrives with as much as three-quarters of her ration consisting of roughage and forage useless as human food. That is why milk, even in the form of products like cheese where the cost of considerable processing has been added, is a low-cost food despite its exceptionally high nutritional quality.

Thus pigs and dairy cows are the most efficient converters of animal feed into human food, beef cattle and sheep the least efficient. Dead center of the spectrum lies the chicken. Whether used as a source of eggs or of meat, chickens require more than twice as much feed as pigs or dairy cows, and less than half as much feed as steers or sheep, to produce a given quantity of human food. But chickens, like pigs, require virtually all of their nourishment in forms that can serve as human food.

The chicken provides cogent proof of a crucial fact in relation to efficiency of conversion of animal feed to human food: such efficiency is not rigidly inherent in a species nor immutable for all time. Rather it may be improved markedly by improvement of the animals through breeding, and by advances in animal maintenance and management. In 1932 an agricultural experiment station study of broiling chickens revealed that the birds had consumed a trifle over three and seven-tenths pounds of feed for each pound of body weight at the age of 12 weeks, at which time the chickens weighed about two and a half pounds. A comparable study in 1951 reported that birds which were 12 weeks old weighed much heavier—about four pounds; they had eaten only a little over two and nine-tenths pounds of feed for a pound of body weight. Today broilers can be raised to market weight in about 10 weeks; in the 1930's, a period of 15 or so weeks were needed. Hence besides the saving in feed there is a saving in labor and farm facilities.

Thus the picture of plenitude enjoyed by American consumers today may be expected to brighten still further as improvements in farm animals, and advances in their management, continue to increase the availability of meat, milk, and eggs.

## *The Aerothermopressor*

**B**ASICALLY, the aerothermopressor is a duct within which atomized water evaporates into a high-speed stream of high-temperature gas. The net result is a rise in total pressure (static pressure plus dynamic pressure) of the gas stream. Thus the aerothermopressor performs the same function as a reciprocating or rotary compressor, but requires only a simple structure having no moving parts.

The history of inventions shows that, almost without exception, the theory of a device comes after the conception of its mechanical arrangement. The aerothermopressor seems to represent an instance in which theory reveals practical possibilities.

When a gas is contained in a tank of fixed volume, it is well known that its pressure will fall if the tank is cooled. The startling fact revealed by theoretical gas dynamics is that the cooling of a gas stream flowing in a duct at high speed produces a rise in total pressure. The static pressure, on the other hand, may either increase or decrease, depending on whether the gas speed is respectively subsonic or supersonic.

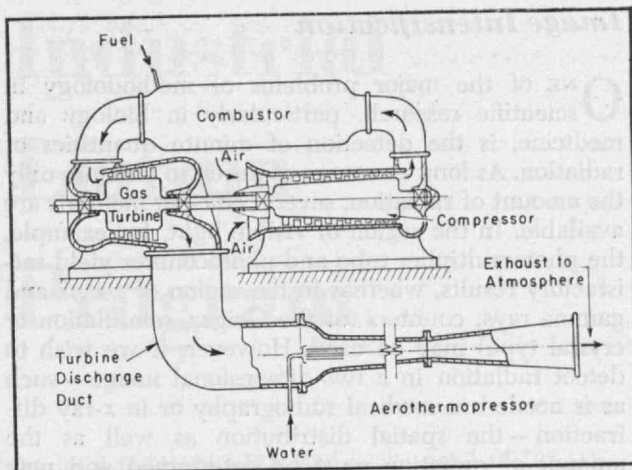
Of the various applications which have thus far been considered, the use of the aerothermopressor for improving both the performance and the characteristics of a gas turbine plant is one of the most promising. For example, when placed at the exhaust of the power turbine in the simple gas turbine cycle, the aerothermopressor is supplied (at no expense, as it were) with a stream of air so hot that appreciable evaporative cooling, and hence an appreciable increase in total pressure, can occur. If the aerothermopressor increases the total pressure and also discharges to the atmosphere, it follows that the stagnation pressure at the turbine exhaust must be reduced below atmospheric pressure. Thus the aerothermopressor is somewhat analogous to the condenser of a conventional steam power plant. Without any change in the fuel flow, air flow, or machinery size, the net power is increased.

Simple as it may seem in outward appearance, the events transpiring with the aerothermopressor are complex and tightly interwoven. The hot air coming from the turbine is accelerated by a converging nozzle into the evaporation section at a Mach number (ratio of gas speed to sound speed) of about 0.7. There the water is injected at low velocity into the gas by multiple jets, and is disrupted into an atomized spray by the shearing action of the gas stream. After the droplet cloud is formed, it is rapidly accelerated by the aerodynamic drag forces exerted by the air on the droplets; it receives heat from the high-temperature gas (and thus its temperature tends to rise); and it evaporates into the gas, with the latent heat supplied tending to keep the droplets cool. The aerodynamic drag and steam generation tend to reduce the total pressure of the gas, while the heat transfer tends to increase it. After the gas stream is nearly saturated with water vapor, it enters a diffuser, where it is decelerated and where dynamic pressure is exchanged for static pressure. The stream is discharged from the diffuser exit to the atmosphere.

From what has been said before, it is evident that, to get a useful result from the aerothermopressor, the beneficial effects produced by the loss of heat from the gas to the droplet cloud must be made to outweigh the combined harmful effects of pipe friction, aerodynamic drag of the droplet cloud, and steam generation.

In large gas turbine units it appears likely that the aerothermopressor will be able to produce a total pressure increase of about 20 per cent. This means that the pressure at turbine exhaust will be about 17 per cent less than atmospheric. For power plants with compressor and turbine efficiencies of 85 per cent, this will produce about a 20 per cent increase in power for the same fuel consumption and machinery size. For plants with component efficiencies of only 75 per cent, the increase in power will be nearer 50 per cent.

With partial sponsorship of the Office of Naval Research and the Bureau of Ships, research has been proceeding at M.I.T. since 1946 on the complex aerodynamic, thermodynamic, heat transfer, and mass transfer phenomena occurring within the aerothermopressor. The research, which is still in progress, has been directed by Ascher H. Shapiro, '38, Professor of Mechanical Engineering, with the support of Kenneth R. Wadleigh, '43, Associate Professor of



*Basically a duct in which flow a high-speed stream of gas and a cloud of water droplets, the aerothermopressor may be placed at the exhaust of a power turbine, or between the combustor and the turbine. In either case the performance and characteristics of the gas turbine plant can be improved.*

Mechanical Engineering, Arthur A. Fowle, 10-44, Assistant Professor of Mechanical Engineering, Bruce D. Gavril, '49, Division of Industrial Coöperation, and Alve J. Erickson, '51, Assistant Professor of Mechanical Engineering.

## Titanium

**L**ONG known as an ingredient of white paints and smoke screens, titanium is beginning to take on a new role — that of a prime structural metal. Although the metallurgy of this metal is still in its early stages, some titanium alloys are showing strength-to-weight ratios almost twice that of alloy steel. Its properties, moreover, continue to compare favorably with those of the alloy steels as the operating temperature is increased. Thus it is in a different category than the aluminum alloys, which have little role in the high-temperature zones of jet engines or in those structural regions of missiles and aircraft which, as Mach numbers rise, will be exposed to aerodynamic heating. As compared to the alloys of aluminum, titanium alloys can be heat-treated to ultimate tensile strengths, approaching 200,000 pounds per square inch.

The key to the intense interest being shown in this metal lies in two numbers that are standard in describing an element; its specific gravity and its melting point. Titanium is little more than half the weight of iron. Its strength is comparable. Its melting point is substantially higher. Generally, it is a potentially useful metal in applications now requiring stainless steel. Tough, extremely resistant to abrasion and corrosion, especially from chlorides, titanium also has the unusual property of offering more protection as armor plate than the most highly developed steels. Its extreme fluidity when molten is proving of aid in the development of welding techniques. On the other hand, it has been found hard to grind and machine.

Although the future for this metal is bright, the present is beset with metallurgical and fabricating difficulties, for the art of refining and handling

titanium is very much in its infancy. Titanium is a viciously difficult metal to extract from its ores. These ores are plentiful, for titanium is the 10th most abundant element in the earth's crust. It is approximately 100 times as common as zinc or lead. But it will combine, when hot, with nitrogen, oxygen, hydrogen and many other elements, generally with serious effects on its properties. When molten, it can pull oxygen out of the refractory bricks used to line melting furnaces for other metals. Titanium therefore is refined today in highly specialized equipment under vacuum or a blanket of noble gas.

The processes now in use yield a sponge of titanium which must be melted in electric arc furnaces under protective atmospheres. The resulting ingots are trimmed, remelted, and subjected to such alloying and fabrication as is required. While falling, the cost of metal obtained by such batch techniques is currently so high as to put it economically out of reach of many commercial applications. Continuous methods for producing this metal, either as a powder or an ingot, are under study. Predictions have been made that the present cost of the raw metal can be cut at least in half.

The present production picture is confused. Most of the metal is being produced under contract to the government in amounts that exceed immediate consumption. But present applications are almost all experimental. Its use in only a few items in large-scale production would quickly exhaust present capacity. Aside from its use in forgings and sheets for air frames, bolts and other fastenings of titanium alloys are available. These show strength-to-weight ratios almost twice that of alloy steel, and are claimed to be capable of saving up to 1,000 pounds of weight an air frame, if used freely.



## Image Intensification

ONE of the major problems of methodology in scientific research, particularly in biology and medicine, is the detection of minute quantities of radiation. As long as we are required to measure only the amount of radiation, several efficient methods are available. In the region of visible light, for example, the photomultiplier tube and photocounter yield satisfactory results, whereas in the region of x-rays and gamma rays, counters (of the Geiger, scintillation or crystal type) may be used. However, if we wish to detect radiation in a two-dimensional image—such as is needed in medical radiography or in x-ray diffraction—the spatial distribution as well as the amount of radiation must be determined and new methods have to be worked out.

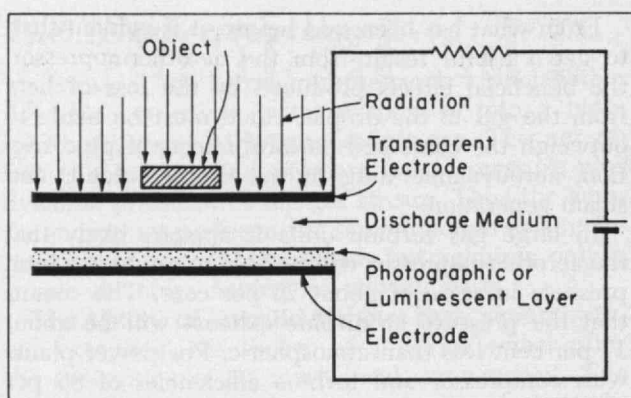
The development of a method for image detection and intensification has been the object of a project carried on by Kurt S. Lion, Associate Professor of Applied Biophysics. This work has been done in the Institute's Department of Biology, under contract with the Office of Naval Research and the support of the Signal Corps.

As indicated in the diagram, the image is formed on a photographic emulsion or luminescent layer by an object interposed in the path of the incident radiation. The radiation to be detected falls upon a chamber consisting of a transparent electrode, a discharge medium (such as a gas) in which an electric discharge occurs under the influence of an applied voltage, a photographic or luminescent layer which responds to the discharge, and a second electrode for collecting the discharge particles.

The chamber acts as a parallel plate Geiger counter in which incident radiation causes the liberation of primary electrons. The primary electrons are accelerated by the applied field which is sufficient to produce ionization by impact. Under appropriate conditions, an avalanche takes place in which each primary electron produces an enormous number (of the order of  $10^8$ ) of electrons and ions. These powerful discharges produce well-defined local marks on the photographic emulsion or luminescent layer in accordance with the amount and distribution of radiation absorbed by the object.

Although the arrangement of the apparatus for accomplishing image intensification is ideally simple, the theory of operation is relatively complex and the experimental difficulties involved in the analysis of the image intensification are considerable. Most of the work has been done with x-rays for which image intensification has reduced exposure time to as little as 1 per cent of the time otherwise required.

The largest possible gain, namely the observation of a single quantum, can be obtained when the discharge medium acts as a spark counter. For such visual observation the photographic or luminescent layer is removed and one electrode is replaced by a glass plate covered with a transparent conductive layer to form an electropane. If the operating conditions are properly adjusted and if a radioactive preparation is brought in the vicinity of the chamber, one can observe sparks where ionizing radiation quanta enter the counter. When radiation from an x-ray



Arrangement of elements for detecting and enhancing radiation in a two-dimensional image.

source enters the counter, a great many sparks can be observed. If an absorbing object is then brought into the x-ray beam, sparks will disappear in the shadow, and the outlines of the object can be seen.

Recently work has been initiated to extend the sensitivity of the counter to the longer wavelengths of the infrared region. In this portion of the spectrum, the incident radiation does not possess sufficient energy to produce electron emission. However, by inserting a photo-conductive layer (such as selenium) into the counter, it has been possible to control the operation of the counter with red and infrared light.

A large number of applications are envisioned in the field of biology and medicine. It may be possible to diagnose the location of tumors in which radioactive material has been concentrated, by pinhole camera techniques. Screen intensification and photographic intensification in radiographic diagnostic work may enable us to use only a small fraction of the radiation hitherto required and so to eliminate the danger of overdoses of x-rays. Light intensification may be of considerable importance in the improvement of astronomical photography and spectroscopy. Finally it may be possible to use the method for the intensification of x-ray fluorescent screens, television screens, and projection surfaces.

## Crystal Filter Design

A PIEZOELECTRIC resonator is one in which an applied electrical stress gives rise to a proportional mechanical stress, and vice-versa. The existence of the piezoelectric effect in quartz and other materials was discovered by Pierre and Jacques Curie in 1880. The first practical application of the piezoelectric effect was a sonic depth finder originally devised by Paul Langevin of France at the end of World War I, as a means of detecting submarines.

At about the same time, A. M. Nicholson, working with piezoelectric Rochelle salt, and Walter G. Cady, working with quartz, showed that these materials could be successfully employed in oscillator circuits. The subsequent development of low temperature-coefficient quartz resonators made possible the stable piezoelectric crystal oscillator.

In 1922, Cady proposed the use of a crystal as a frequency selective element by taking advantage of the sharp maximum in current through the crystal

(Continued on page 110)

# The Institute's Industrial Liaison Program

By EUGENE B. SKOLNIKOFF

**L**AST year some 68 corporations were invited to send representatives to 14 special technical symposia held especially for their benefit. Approximately 600 people came to M.I.T. for these meetings; the attendance figures promise to be even higher for the 1955 series of conferences. These special symposia are offered as part of the service provided for the companies participating in M.I.T.'s Industrial Liaison Program — a new and important plan for industry-university co-operation.

The idea for some sort of co-operation between M.I.T. and industry grew out of the financial problems encountered by the Institute following World War II, and resulted in the formation of the Industrial Liaison Program. Established in 1948, it was designed to help meet these financial needs, and, at the same time, to provide close technical contact between M.I.T. and industrial research. Now in its sixth year, the Program has come to have great significance as a medium for the exchange of ideas and the stimulation of progress in research, in addition to the considerable financial support it has brought M.I.T.

Industry has become increasingly aware in recent years of the financial difficulties of the independent universities, and a general acceptance of what industry's role in the matter should be has been evolving gradually. For example, in 1951 the National Association of Manufacturers adopted a resolution which declared that "Business enterprises must find a way to support the whole educational program — effectively, regularly and now." Alfred P. Sloan, Jr., '95, in an article in *Fortune* entitled "Big Business Must Help Our Colleges," commented: "It is vital — if we are to perpetuate our free society — that we find a way to keep our colleges, universities and technological institutions virile, progressive and — above all else — free. To stay that way they must have adequate financial support."

M.I.T. is in a fortunate position to attract industrial support, for the depth and scope of its research activities can provide something in return to industrial firms, over and above the education of engineers and scientists. The symposia already cited, special visits to the Institute, publications, all can be of material help to an industrial research program. In essence, what M.I.T. can offer is convenience of access to Institute laboratories and research programs as a "return" for industrial support.

This idea is the basis for the Industrial Liaison Program, which now has over 70 corporation mem-

bers on a regular contractual basis. Most of the participating companies are among the nation's largest corporations, and most have indicated that this will be long-term support. Financially, the Program now accounts for approximately 10 per cent of the academic budget, but its over-all importance to M.I.T.'s educational and research program now extends much farther than the income alone.

## *Financial Background*

At the time of inception of the Program, relatively new problems were besetting universities in the United States, and technological institutions particularly. Following World War II, enormous increases in enrollment were the first and most obvious changes that taxed the existing facilities. These increases affected the technological schools particularly because of the larger and more complex physical plant required to educate students in engineering and modern science. With adequate financial resources this problem could have been met, but two other conditions prevailed that made the situation serious.

The first was the inflation that essentially cut the real endowment income in half. The second was the gradual disappearance from the American scene of the large personal fortunes that had in the past provided a major part of the funds for our private universities. It was obvious then that the problem of increasing the endowment would be a difficult one and that perhaps it could never be solved.

Concurrently, various other problems came to the fore. Many institutions undertook large research programs for the government during the war and subsequently found that this government-sponsored research was continuing and, in fact, expanding in the postwar years. The principle of research as a necessary complement to a university's academic program is a sound one, but sizable financial considerations from any single source are always a matter of some concern to an independent institution. It is important, therefore, that schools like M.I.T. have sufficient financial reserves so that government funds never become essential to their operations. Technological institutions have another, continuing, requirement that devolves on them by virtue of their type of education and research. Close contact for the staff with industrial research and industrial man-power needs is essential to help guide the work in both the laboratory and classroom.





M.I.T. Photo

*One means by which companies are kept informed of research progress is through visits to the Institute by representatives of the companies. Shown above is John Wulff, Professor of Metallurgy (with pipe), explaining a problem in metallurgy to visitors in the Sloan Metals Processing Laboratory.*

### **Formulation of the Industrial Liaison Program**

Recognizing all these requirements, M.I.T. turned to the one type of institution in this country that could help with each: the industrial corporation. Financially, industry remained the largest private source of wealth and, more important, industry was already beginning to recognize that it has a social obligation and an obligation to itself, to support private education. From the educational point of view, M.I.T. desired and needed more contacts with industry. Thus, the financial objectives complemented those of education. The problem remained of how to attract industrial support to satisfy these objectives and how to put the support on a semipermanent basis. For this part of the problem M.I.T., as noted before, is in a position to offer something concrete to industrial concerns.

The plan was then formulated: in return for long-term *unrestricted* financial support from a company, M.I.T. would pledge to keep the company informed of the research under way at the Institute and would make it possible for the company to keep in close touch with progress by visiting the staff engaged in the work. The unrestricted nature of the financial support is important here, for the financial needs fall in many different areas, and unless this income can be used freely, its value is considerably diminished. Thus, a plan was conceived that answered many needs at once: it added to income, helped maintain independence, and provided a clear channel for discussion and exchange on the laboratory level between industrial and Institute personnel.

This plan became the Industrial Liaison Program, and in 1948 active solicitation began to recruit mem-

bers for it. In most cases, the companies were asked to sign or pledge membership for a five-year period to insure the long-term nature of the support. This became the normal pattern, and one of the more conclusive evidences of the success of the Program is the recent renewal of most of those original memberships for a second five-year period.

### **Operation of the Program**

The actual mechanics of operation of the Program are carried out by the Industrial Liaison Office, with five staff members. The over-all objective of the Program is to provide the companies with what might be termed "convenience of access" to M.I.T., and to provide channels of communication between the company and M.I.T. staffs. To do this effectively, the relations with each of the participating companies must be highly personalized and informal; the operation of the Liaison Office is guided by those goals. Each of the staff members has the responsibility of handling the relations with a specific list of companies, and it is his job to learn about both M.I.T. and the companies intimately. In this regard, it might be noted that the personnel chosen to man the Liaison Office are usually highly competent young technical men who have demonstrated breadth of interest and who have the requisite personality characteristics. The staff normally considers the appointment as a steppingstone to other jobs after a period of a few years.

The concrete part of the "return" being offered the participating companies falls into three main categories: visits, symposia, and publications. In addition to regular activities of the Liaison Office, there are many special services that are tailored to the needs of the individual companies.

The first of the regular means by which the companies are kept informed of research progress is through the medium of visits to M.I.T. by representatives of the companies. These visits, treated on an individual basis, are for the purpose of giving designated company personnel, who are cognizant of broad areas of company research, a chance to "look over the shoulder" of those actually engaged in the work, to learn in greater detail what is going on, to discuss face-to-face their own activities and interests as it applies to M.I.T.'s work and, perhaps, to get a "technical steer" in a field related, but outside the scope, of their company's normal research program. These visits are an important part of the "two-way street" goal of the Program, for they give the M.I.T. staff a picture of industry's needs and provide a direct channel for the staff to keep abreast of the latest industrial developments in their own field. It sometimes happens that this type of contact has resulted in changes of emphasis in the work under way at the Institute when the Faculty is made aware of the research needs of industry. This, of course, applies to engineering research more than it does to science, and may be particularly true in the management and social science research areas at M.I.T.

To perform this part of the Program adequately, it is essential that the Liaison Office staff be familiar with all of the research programs of the Institute and

with the professional interests of the Faculty members. To aid in this and to provide a ready reference for company personnel, a directory of Institute research is published each year by the Liaison Office. Excluding all classified research, the Directory for 1954-1955 contains over 600 separate projects—a large order for any one person to know well, but nevertheless a spectrum of research that is bound to include subjects of interest to almost any industrial concern.

The second major category of the Liaison Program is symposia, which have come to be regarded by the companies as the most useful and significant of the activities. Each year, the Liaison Office sponsors approximately a dozen symposia exclusively for the participating companies; the subjects range over all of M.I.T.'s activities, but a conscious effort is made to match the interests of each of the companies several times each year. These conferences are designed to conform with the over-all purposes of the Program—that is, to provide more channels of communication between M.I.T. and industry and to give the companies a chance to “look over the shoulder” at work in progress. Thus, these meetings are very different from technical society meetings in which, normally, papers are presented only of completed work. Here are offered informal presentations of work in progress, meetings that provide ample opportunity for the give-and-take of discussion, and a chance for representatives of different technical disciplines to discuss the same subject. The membership of the Liaison Program consists of companies with varied interests, and the opportunities for their technical staff to mix with the technical staffs of other industries is unusual and rewarding. The Faculty, too, find these conferences highly stimulating, for they provide an unexcelled opportunity informally to sound out many different industries on their problems and to keep abreast of research developments all over the country. The topics for these meetings have included, for example, Fracture and Creep of Metals, Supervision of Research Personnel, Applications of Digital Computers, and Harmonic Analysis of Seismograms.

Systematic distribution of M.I.T. publications is the third of the regular services offered by the Program. The technical reports and progress reports of the M.I.T. laboratories are sent to the companies on a routine basis; preprints and reprints of staff articles for technical journals are sent as well. To give an idea of the scope of M.I.T.'s research activities, some 400 different reports were mailed from the Liaison Office in 1954 with a total of 60,000 items to all the companies. Naturally, each firm is not interested in all reports, but the companies are able to specify in advance in which fields they wish to receive publications.

The remainder of the services offered to participating companies all fall into a category that might be called “special” or “individual.” The staff of the Liaison Office considers it part of its job to continually search for new ways to make M.I.T.'s facilities of use to the companies, within the framework of the normal ethics of operation. For example, where appropriate, a company might be invited to

send a technical man to one of the M.I.T. laboratories for a period of several weeks or months to become thoroughly familiar with the practices in a particular field. Or, arrangements might be made for a Faculty member to visit a company and give a seminar or lecture on the company's home ground. If a company is interested in sponsoring a specific research project, or employing a consultant from the M.I.T. staff, contacts can be made with the most highly qualified personnel at the Institute available for the particular job in mind. These types of services and many others have been performed often during the existence of the Program, and to some companies these extra dividends have been of special value.

There is one other benefit to participating companies that arises almost incidentally from these activities, but a benefit that can be highly important when engineers and scientists are in such short supply. That is the contact with graduate students in the laboratory, rather than in a recruiting interview alone. There is a definite advantage for a company in establishing a technical relationship with a student while he is still working on his thesis, and such contacts can become significant when the student finishes his graduate work and is deciding where to accept employment.

### *Problems of Operation*

The reasons for the creation of the Industrial Liaison Program and the actual operations of the Program have been discussed, but no mention has yet been made of the problems that occasionally arise and the means by which they are met. Perhaps the major problem that must be avoided arises from the basic difference in emphasis existing in industry and in the university. Specifically, many industrial firms must perforce be concerned primarily with short-range developments and projects and can devote but a small proportion of their attention to basic research. This situation does point up the advantages of a plan, such as the Liaison Program, for keeping abreast of the state of the art in fields somewhat outside the company's operations, but which may affect those operations. However, it also means that some industrial visitors will have specific immediate problems for which they need expert help. It is not the purpose of the Program to provide the answers for day-to-day problems; the Faculty at M.I.T. still retain their prerogative to establish private consulting relationships with industry. But where does the dividing line fall between a “state-of-the-art” visit and a “consulting” visit? In practice, this problem occurs rarely, but when it does there must be some criterion fair to all concerned. For operating purposes, a short visit with a staff member, not requiring any preparation on his part, is considered one of the services of the Program. When the staff member is asked to study a specific problem and must do some work on his own, then this is taken to be consulting. In general, when a question of making such a distinction arises, it is the function of the Liaison Office to see that the basis of approach by the company is an appropriate one. Of course, it frequently



happens that staff members make private consulting arrangements or receive support for specific research projects as a result of their brief contacts through the Liaison Program.

Other problems occur in the relations with the individual firms — problems of a completely different nature. Each company is unique, and that includes the level of activity of each. Too much activity might be troublesome, but so, also, is too little activity. M.I.T., as was pointed out before, is anxious to make the support long-term in nature, and this implies satisfied companies and genuinely friendly relations both ways. The Liaison Office, in this respect, is in the position of the retail store: the wares for sale can be laid out on display but the customer cannot be forced to buy. Successful operation of the Liaison Program assumes that the companies will take an active part by adequately disseminating the information within the company and by a willingness to send technical people on visits that may have only long-term results. In most cases, the company designates one man as Liaison Program representative, and frequently the success or failure of the relationship depends on his attitude and degree of enthusiasm. This may require individual attention in the form of visits by the M.I.T. Liaison officers or Faculty members to encourage greater participation. It is gratifying that only a small minority of the companies require any special treatment to bring about a higher level of activity.

In general, problems have arisen only rarely and it is fair to say that, in its six years of operation, the Liaison Program has become a truly integral part of M.I.T.

### ***Future of the Program***

The question of the future growth of the Program is a pertinent one, for it would seem offhand that the greater the number of companies participating, the

*M.I.T. Photo*



*Professor Gordon S. Brown, '31, Head of the Department of Electrical Engineering, takes an active part in one of the dozen or so symposia which the Industrial Liaison Office sponsors for its member companies.*

greater the returns to M.I.T. However, the Program is now maintained as a quality operation, treating the participating companies on a highly individualized basis. It is necessary, therefore, to insure that any increases in number do not result in a retreat from individual, personal relations.

From a Program that started out primarily as a partial means of satisfying M.I.T.'s financial needs, the Liaison Program has become an essential part of the Institute's educational and research program. And not only has this occurred at M.I.T.; several other universities have started similar plans of their own. One cannot minimize the financial advantages, for obviously any arrangement that brings in over a million dollars a year of essentially unrestricted funds, without circumscribing any of the rules and mores by which the Institute operates, is desirable. At the present rate of return on endowment funds, the I.L.P. income is equivalent to about \$25,000,000 of endowment.

But the Program is at least equally important as an aid to the Faculty, and particularly to the younger Faculty members. For them the Industrial Liaison Program provides a direct and continuing channel of information to and from some of the country's most forward-looking corporations. As a result, the Institute's educational program is enriched by these contacts, the students benefit in a very real sense, and, in a highly effective process of feedback, the M.I.T. research programs are stimulated through a realization of the possible application of the results of research.

In summary, perhaps it is sufficient to recall a statement once made by the Dean of Engineering: "If the Industrial Liaison Program did not exist, it would have to be invented . . . for the educational value alone." With such an attitude within M.I.T., the Industrial Liaison Program can be considered as having been graduated from experimental to permanent status — a sure sign of success.

# Engineering Education

# And National Spirit

*To Develop the Mind in Its Search for Excellence,  
To Develop the Spirit in a Sense of Responsibility  
Is the Challenge of Today's Engineering Education*

By JULIUS A. STRATTON

*The following article is the text of an address which was delivered by Dr. Stratton on May 7, 1955, on the occasion of the Centennial Celebration at New York University. In introductory remarks prefacing his address, Dr. Stratton said: "As we celebrate this Centennial, we are in a wider sense observing the progress in 100 years of the engineer from artisan to member of an esteemed profession in our society."*

**I**N every age the patterns of education have reflected the temper of the times and the culture and character of a people. To some future historians the rise and development of engineering education will reveal those great currents of thought and striving that have dominated the Nineteenth and Twentieth Centuries: the material triumphs, the philosophic conflicts, and the brooding spiritual doubts. It would be difficult to find a more fitting example of the evolving interplay between a society and its institutions. In the beginning the crude needs of freshly industrialized communities dictated the curricula; and now new learning, generated and disseminated by our schools of science and engineering, is remolding and transforming society.

## ***Beginnings of Technical Institutions***

Let us glance back for a moment at the sources from which modern engineering education has developed, and trace briefly the stages through which it has passed.

The earliest roots reach back to the mechanics institutes which sprang up first in Britain and then in the United States toward the beginning of the Nineteenth Century. These were a direct product of the industrial movement of the times. For the most part they were voluntary associations of working people, formed spontaneously to help men keep pace with a changing and expanding technology. In no sense whatever were they professional schools, but dealt in practical matters and aimed at the encouragement and diffusion of scientific knowledge among mechanics, farmers, and artisans. Most of these institutes have long since disappeared, although a few

still survive. They were significant of the awakening demand for popular education at the practical level, and they left their mark upon the curricula of our schools of engineering long after they themselves had vanished from the scene.

Neither the practical courses of these mechanics institutes, nor the classical curricula of Harvard or Yale or Princeton, could long meet the needs of men who were to grapple with the countless problems of emerging industry which reach beyond the accumulated experience of mill and shop. The years before 1850 saw the spread of this industrialization at an ever accelerated pace. Canals were built, railroads pushed through the wilderness, factory towns sprang up over all the Northeast. At the root of all this, of course, lay the invention of the steam engine. It was the availability of mechanical power which transformed our world in the mid-Nineteenth Century, as nuclear power may well transform it in the Twentieth. Within a few short years the capacity of man to construct and to produce was multiplied a thousandfold. The volume and variety with which the human mind had had to deal increased enormously. The time had come for a new synthesis in higher education.

Our oldest engineering colleges were founded in response to that demand. The United States Military Academy at West Point taught military engineering from the time of its establishment in 1802. Norwich, in Vermont, founded in 1819, incorporated engineering in its early courses. Rensselaer Polytechnic Institute appears to have had, since 1824, a clear claim to be first among the schools of technology in our modern sense. Then followed courses in engineering at Union College in 1845, and quickly thereafter the Scientific Schools of Harvard and Yale, New York University, Michigan, with M.I.T., Columbia and Cornell following in the 1860's.

Now it is true that this upsurge of American industry was the critical factor that led to the establishment of these new schools in the mid-Nineteenth Century. However, that in itself does not explain their character, their aims, or the nature of their curricula. To understand the intellectual forces that breathed life into these institutions, one must take account of the bitter philosophical controversies that





Ward Allan Howe

*Religion is fortifying its place as a factor in engineering education as evidenced by the emphasis today on studies in the humanities. Impressive Riverside Church in New York, beautiful in architectural design as well as in engineering construction, appears above.*

raged in those years in the mid-Nineteenth Century in the Western World.

The intellectual life of the Nineteenth Century was split between those who were moved by the spirit of rationalism and empiricism which stems from the Age of Enlightenment, and those who held stubbornly to the classical idealism. The British utilitarian school, itself a product of the industrial epoch, represented the cause of rationalism, and it led the attack by the common people on the entrenched aristocracy in education of the great universities. One must appreciate the powerful influence of Jeremy Bentham, Lord Brougham, John Stuart Mill, and in this country of Robert Owen and Fanny Wright, upon the founders of American colleges in the Nineteenth Century. The efforts of Bentham and others from about 1825 to establish the University of London represented a direct attack upon the ancient universities, and in England they were bitterly resisted. But the Charter which William the Fourth ultimately granted to University College in London set forth as its aim the promotion of useful knowledge for all classes and denominations without any

distinction whatsoever. Almost in the same year instruction began in a university of this other great metropolis, New York, with the announcement that "the children of the artisan and the tradesman shall be as welcome as the children of the rich," and "young men may be trained to become merchants, farmers, manufacturers, architects or civil engineers."

Now the word "utilitarian" does injustice to the school it represents. For these pioneers in education, "utilitarian" was by no means merely synonymous with "practical." They did believe that there is a dignity and importance in the mastery of useful knowledge; that science and technology are legitimate foundations of higher education; and that the process of learning, whether in classroom or laboratory, must be enriched by that direct experience which gives life and meaning to knowledge.

One must concede that many who engage in this controversy showed less concern for the teaching of technology than a sense of rebellion against the traditional university curricula hemmed in by the four corners of Latin, Greek, Rhetoric, and Paley's *Evidences of Christianity*. As the century wore on, the greatest intellects of the age joined the fray. Thomas Arnold and Cardinal Newman spoke eloquently in behalf of the true usefulness of liberal education, and Thomas Huxley and Herbert Spencer expressed with surpassing force and conviction the importance of relating education to the problems of our time. When all was said and done, a Royal Commission had made only small changes in the curricula of Oxford and Cambridge, the Scottish universities continued to cultivate the empirical along with the traditional learning, while across the Atlantic, Harvard University was transformed beyond recognition in the hands of Eliot. Yale University remained blandly unperturbed by the fracas, and colleges of engineering all over the United States reaped the harvest.

There were influences other than British, but their importance is more difficult to assess. A hundred years ago L'Ecole Polytechnique was the most famous technical school on the Continent, and unquestionably the example of its high standards impressed the founders of many of our own institutions. German influence was more significant, particularly in the realm of graduate work and research, and probably our large universities today owe more to the German model than to the British. The reader may recall the direct role that German influence played in the founding of the University of Michigan, of Johns Hopkins University, and of the University of Chicago. And so, too, the rising technological institutes of the German states played their part in the formation of our engineering colleges. The engineering schools of such cities as Brunswick, Berlin, Munich, and Stuttgart preceded our own by some 30 years, and drew the attention of some of our most distinguished educators.

Examine the catalogue of any American engineering school today and you will find vestiges of all the elements that entered into the original synthesis of an engineering education. From the mechanics institutes we have inherited what remains of shop-

work, foundry, surveying, mechanical drawing. In the "utilitarian rebellion" against classical curricula we threw out Latin and Greek, but retained English, history, and modern languages as the bare essentials of a liberal education. From continental schools, presumably, we learned to insist upon thoroughness in mathematics, physics, and chemistry. As to the "professional subjects," they are truly an indigenous product of American institutions. Not so long ago these were courses in dynamo design, steam boilers or dam construction; now in their place we expect to find circuit theory, thermodynamics, or soil mechanics — a clear sign of the maturing responsibilities of an engineer.

### ***The Meaning of Professional Education***

In this brief outline we have seen the roots from which our engineering colleges have sprung. How now shall they grow? Who are the engineers? What is their function, their responsibility; for what place in our society shall we educate them?

One hundred years ago there were scarcely enough engineering graduates in all the country to exercise an appreciable influence upon our industrial growth. Thus in the years immediately following the Civil War the total enrollment in engineering at New York University reached 39, while the entering class at M.I.T. in the fall of 1865 was only 72. By contrast, in the year 1954, some 214,000 were pursuing graduate and undergraduate engineering studies in 218 institutions, of which 150 are accredited at the professional level. And that imposing number, we are told, is wholly inadequate to satisfy the urgent needs of ever-expanding industry.

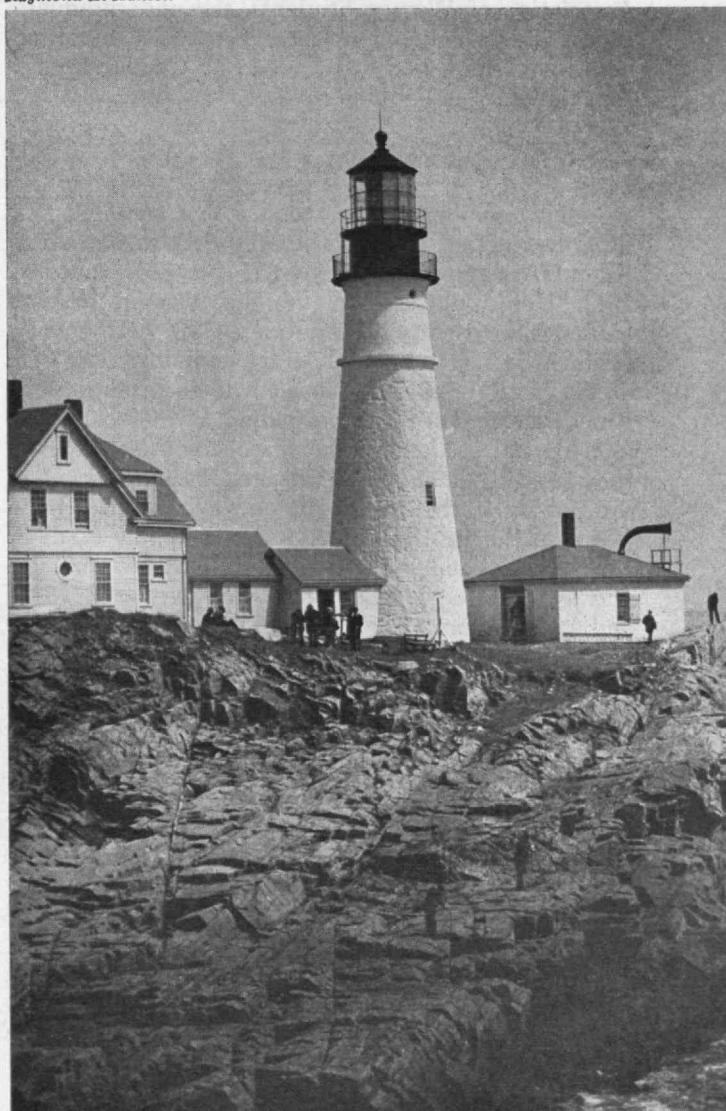
To ascertain the total number of men — and women — who in this country pass today for engineers would be well-nigh impossible. There are, for example, some 104 nationwide engineering and allied organizations in the United States with a listed membership in the neighborhood of 750,000. There are more than 2,500 local associations declaring engineering or technical aims with an untold membership. The so-called "Founder Societies" — the first great societies of the profession — are growing to impressive size. Thus the American Institute of Electrical Engineers has a membership of more than 46,000; the American Society of Mechanical Engineers exceeds 37,000; and the American Society of Civil Engineers has passed 34,000. And to these must be added the countless thousands who by lack of interest, or in default of the minimum technical qualifications fail to affiliate themselves with any professional organization. In all, they constitute a spectrum of human activity, shading by imperceptible degrees from the statesmen and leaders of the profession through management and design, through research and through operating practice, into production and sales, and on into the vast twilight zone of the technicians where many are engineers only by courtesy of self-given titles.

In a world that day by day witnesses the growing complexities of expanding technology, how are we to discriminate among all these people? Which are the engineers and which the technicians? The law-

yers and the doctors have resolved this dilemma by the simple expedient of a definition: a lawyer is a man who has been admitted to the bar. The advantages of such a solution are manifest, and it is inevitable that a strong segment of engineering opinion should urge the extension of licensing procedure. Now it has become the practice to accredit our schools, and licensing seems in effect no more than the accrediting of an individual. Under the Engineering Council for Professional Development, the accrediting process has been wisely administered and clearly has contributed to the rising standards of engineering colleges. But for all the good that stems from the concept of accreditation, one may discern also the latent seeds of a national disease — the urge to conform and to impose conformity upon others. This is a symptom to which every engineer who has a concern for the future of his profession should be alert. Whether accreditation and licensing shall become forces for good or for evil rests with the engineers alone; it rests upon their wisdom, upon their capacity for statesmanship, upon their insight  
*(Continued on page 114)*

*Portland Head Light in Maine is a reminder of man's eternal struggle with the sea. New phases of engineering are helping to develop better ships, and recent studies in science indicate that the ocean can be more productive of sea foods, as well as a source of fresh water.*

Raymond E. Hanson





# The M.I.T. Coed—Then and Now

*How Do Alumnae Evaluate Their M.I.T. Training? Do They Use It Professionally? What Do They Do after Graduation? Answers Are Provided by a Survey Recently Completed*

By the REGISTRATION COMMITTEE, M.I.T. WOMEN'S ASSOCIATION

"She never held me on her knee  
But she was all the world to me

With Calculus she was well bred,  
My Mother was a Tech coed."

THE 1954 Tech Show immortalizing the coed symbolizes an increased awareness of women students at Tech. Today's coeds are considered members of the M.I.T. community with equal responsibility in student government and campus activities. Coeds have been elected class officers several times in the past decade, as well as elected to head several student activities. The president of the Association of Women Students, the undergraduate group, now is a member of the Institute Committee—the governing body of the M.I.T. Undergraduate Association.

## *The First Coed*

Active membership in the M.I.T. community, as described above, contrasts sharply with the situation Ellen H. Swallow (Mrs. Robert H. Richards) faced in 1871. Her application as the first woman student baffled the Faculty Committee. They had always assumed M.I.T. to be a school for men only. A search of the Institute charter revealed no such restriction. Rumor has it that by the expedient of admitting her as a special student, without fee, for the first term they kept her name off the record. If the experiment did not work, they could pretend it had never happened at the Institute.

The experiment worked so well, however, that she was awarded a bachelor of science degree in 1873, and a new laboratory for women was opened in 1876, made possible largely through her efforts and a contribution from the Boston Women's Education Association. The laboratory, providing instruction in "chemical analysis, industrial chemistry, mineralogy and natural history," proved a popular course in which over 100 women participated before it was discontinued in 1883. After this date, qualified women were admitted to any regular Institute course. By 1887 25 women were enrolled and by 1895 women constituted 6 per cent of the total enrollment. The percentage remained high until after 1900 when the majority of women's colleges began to offer courses leading to a science degree. For the last 40 years the figure has remained between 1 and 2 per cent.

## *The Average Tech Woman*

A recent survey was made to determine what happens to M.I.T. women after they graduate. Do they use their technical education to make a contribution in their professional field and in the community in which they live? How many attempt both a career and marriage? A response from 72 per cent of the graduates and 30 per cent of the special students revealed that a Tech woman is a "woman for a' that."

The average Tech woman is a native of Massachusetts, is a scientist, is married to a scientist, has worked over 10 years in her field, belongs to professional societies, is active in community activities, and has a diversity of hobbies and outside interests. The fact that she is more likely now to return to active professional life after raising a family is in no small part a reflection of the changing status of women economically. A higher standard of living and an increasing acceptance of technically trained women in fields formerly open only to men are also contributing factors.

Although a Tech degree enables her to more than hold her own professionally, the average Tech woman, if we can judge from the Survey responses, feels the need of a broader education in the liberal arts. While the overwhelming majority were completely satisfied with their professional training, there was frequent mention, especially from those married to professional men, of the need for this broader liberal arts background in normal social contacts. The recent curriculum change allowing undergraduates to substitute courses in the humanities for professional electives recognizes this need. This should be of distinct advantage to the increasing number of undergraduates who are coming to Technology directly from secondary schools without advanced liberal arts training.

## *Courses Elected*

The diversity of courses which contemporary Tech women elect, as shown on the accompanying table, is perhaps the most outstanding single factor revealed by the Survey. Before 1900 Tech women elected only four courses: IV (Architecture); V (Chemistry); VII (Biology); and VIII (Physics). Between 1940 and 1950 degrees were awarded to women in all courses except III (Mining and Metallurgy); XI (Sanitary Engineering); XIII (Marine Engineering); and XIV (Electro-Chemical Engineering). In the 1940's alone degrees in Engineering were awarded to more

# 1953 SURVEY OF M.I.T. WOMEN

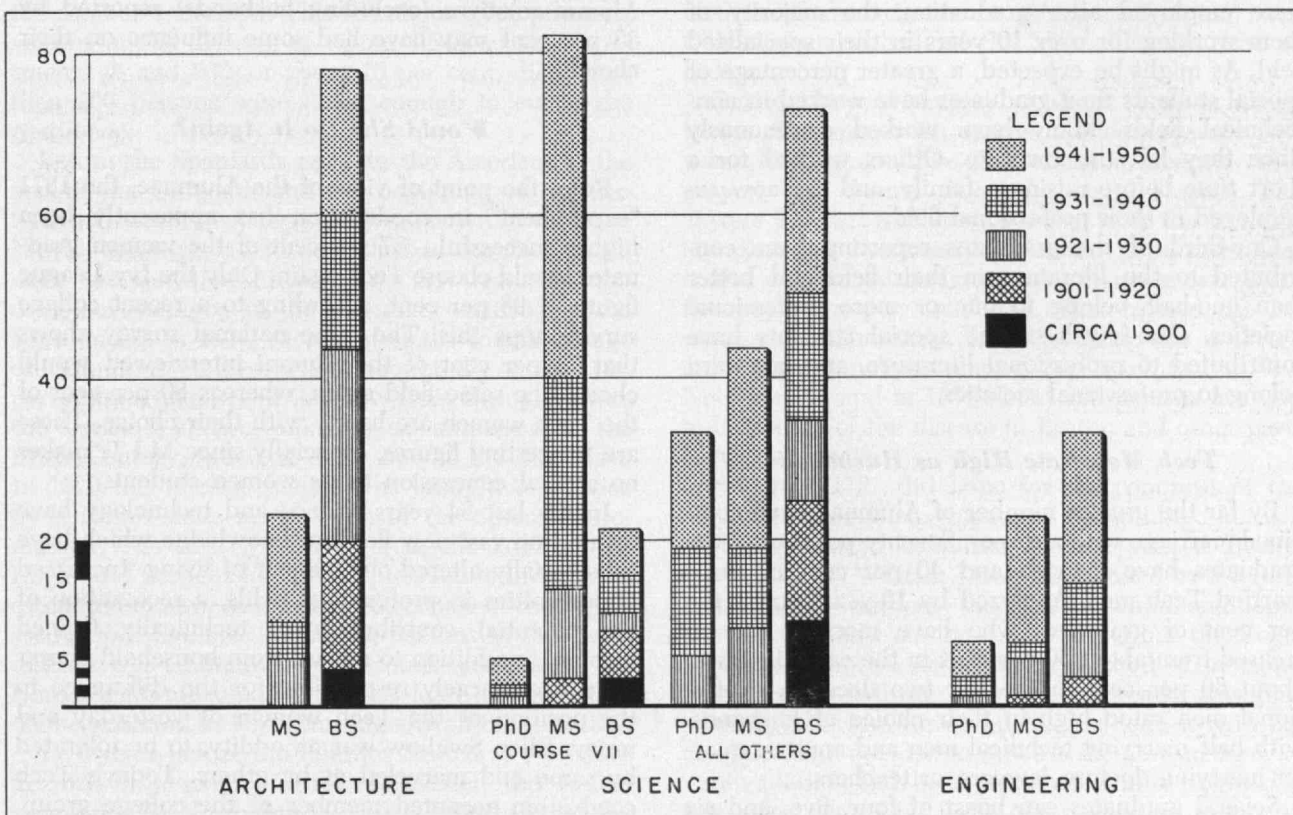
## Course Majors By Class Groups And Degrees For All Living Graduates

Course		Class Groups															Total	Per Cent			
No.	Name	-1900			1901-1920			1921-1930			1931-1940			1941-1950			1951-1955			Number Degrees	of Total Graduates
		D*	M	B	D	M	B	D	M	B	D	M	B	D	M	B	D	M	B		
I	Civil Engineering	-	-	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	3	.6	
II	Mechanical Engineering	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	3	-	5	1.0	
III	Mining and Metallurgy	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	3	.6	
IVA	Architecture	-	-	4	-	-	16	-	6	23	-	2	17	-	7	18	-	-	4	97	19.7
IVB	City Planning	-	-	-	-	-	-	-	-	-	-	2	1	-	6	1	-	1	-	11	2.2
V	Chemistry	-	-	8	-	-	10	3	5	6	8	2	7	8	9	13	3	1	6	89	18.1
VI	Electrical Engineering	-	-	-	-	1	-	-	1	1	-	-	1	-	3	3	-	1	2	13	2.6
VII	Biology, Public Health	-	-	3	-	3	6	1	11	2	1	26	4	3	42	6	2	4	1	115	23.4
VIII	Physics	-	-	2	-	-	2	2	3	2	2	3	3	4	7	4	2	2	6	44	9.0
IXA	General Science	-	-	-	-	-	2	-	-	2	-	-	4	-	-	2	-	-	4	14	2.8
IXB	General Engineering	-	-	-	-	-	1	-	-	-	-	-	1	-	-	4	-	-	4	10	2.0
X	Chemical Engineering	-	-	-	-	-	1	-	2	2	2	-	-	-	1	3	-	-	3	14	2.8
XII	Geology	-	-	-	-	-	1	-	1	-	2	2	-	-	3	-	-	-	1	10	2.0
XIII	Naval Architecture	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	2	.4
XIV	(See below)	-	-	-	-	-	1†	-	-	1†	-	-	-	-	-	-	-	-	2‡	4	.8
XV	Business Administration	-	-	-	-	-	-	-	-	-	-	-	1	-	-	2	-	-	4	7	1.4
XVI	Aeronautical Engineering	-	-	-	-	-	-	-	-	-	-	2	3	-	3	5	-	1	-	14	2.8
XVII	Building Construction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2	.4
XVIII	Mathematics	-	-	-	-	-	-	1	-	-	1	3	2	3	5	3	1	2	3	24	4.9
XIX	Meteorology	-	-	-	-	-	-	-	-	-	-	-	-	4	3	-	-	-	1	8	1.6
XX	Food Technology	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	4	.8
	None Specified	-	-	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	3	.6

\*D indicates PhD. and D.Sc.; M indicates M.S., M.Arch., M.C.P., M.P.H., C.P.H.; B indicates B.S., B.Arch.

†Electro-Chemical Engineering

‡Course XIV is now Economics



The statistical information given in the table and chart is taken from a "Survey of Former Women Students at M.I.T." In May, 1953, questionnaires were sent to 1,357 former students; a total of 536 replies were received from Alumnae in 35 states and seven foreign countries, representing 72 per cent of the graduates and 30 per cent of the special or non-degree students.



women than in all previous years combined, evidencing the wider opportunities for women in these fields inspired by World War II and subsequent developments in nuclear physics and electronics.

Approximately two-thirds of all graduates were enrolled in the School of Science and almost a fourth in Architecture and Planning, with the remainder in the School of Engineering. A breakdown by courses shows that 23 per cent elected Biology. This reflects enrollment in the very popular course in Public Health which was offered at the Institute for some years prior to 1945. Twenty-two per cent studied Architecture and Planning, 18 per cent Chemistry, 9 per cent Physics, and 5 per cent Mathematics. The remaining 23 per cent were scattered among all courses except Sanitary Engineering.

### *Graduate Degrees on Increase*

The 305 graduates responding to the Survey received 315 degrees, equally divided between undergraduate and advanced degrees. Three-quarters of the latter were master's and one-fourth doctor's. There is a noticeable increase in the number of graduate degrees since 1930, reflecting the trend toward graduate research in science and engineering.

### *93 Per Cent Employed after Graduation*

Prior to World War I a college education could be afforded only by the well to do, and employment in scientific fields was not generally open to women. The war changed all this and opportunities opened up for women with technical training. On the basis of Survey findings, 93 per cent of all Tech women were employed after graduation, the majority of them working for over 10 years in their specialized field. As might be expected, a greater percentage of special students than graduates have worked in non-technical fields. Many have worked continuously since they left the Institute. Others worked for a short time before raising a family, and are now re-employed in their professional field.

One-third of the graduates reporting have contributed to the literature in their field and better than one-half belong to one or more professional societies. One-fourth of the special students have contributed to professional literature, and one-third belong to professional societies.

### *Tech Men Rate High as Husbands*

By far the greater number of Alumnae have combined marriage with a career. Seventy per cent of the graduates have married and 40 per cent of these married Tech men. Analyzed by 10-year groups the per cent of graduates who have married has increased from about 50 per cent in the early 1900's to about 80 per cent in the last two decades. Professional men rated high in their choice of husbands, with half marrying technical men and another quarter marrying doctors, lawyers, or teachers.

Several graduates can boast of four, five, and six children, although the total 383 reported on the Survey for all graduates through the Class of 1950 indicates only 1.23 children per graduate.

## *Wide Scope of Activity*

M.I.T. women are using their education in practically every field — military and government service; medicine, law, business; pure and applied research in education and industry; teaching at all levels; the arts; homemaking; and civic and community activities where her services are needed.

A number of M.I.T. women have passed their training on to succeeding students as professors in colleges all over the world. Many took premedical courses at the Institute and are now practicing physicians and/or professors at well-known medical schools. Several have combined engineering with law as patent attorneys, while others have used their training as background for writing, primary and secondary school teaching, and museum work. Tech women serve as consultants in such unfeminine fields as chemical engineering, heat transfer, and oil geology. The military forces report Tech women with such titles as Construction Management Engineer, Head of — Structural Engineering Branch — Design Division — District Office.

### *Why Did She Come to Tech?*

Over half of the graduates reported their reason for coming to Tech as the reputation of the Institute for scientific education, or that of a particular professor or course. Some came many miles to find a technical school which would admit women. Many others took advantage of scientific education within easy commuting distance of their homes. To about 10 per cent the offer of an Institute scholarship or a grant for special study was a determining factor. Alumni relatives (excluding husbands) reported by 33 per cent may have had some influence on their choice.

### *Would She Do It Again?*

From the point of view of the Alumnae, the 1871 "experiment" in coeducation has apparently been highly successful — 87 per cent of the women graduates would choose Tech again. Only the Ivy League figure of 98 per cent, according to a recent college survey, tops this. The same national survey shows that 75 per cent of the Alumnae interviewed would choose the same field again, whereas 80 per cent of the Tech women are happy with their choice. These are interesting figures, especially since M.I.T. makes no special concession to its women students.

In the last 84 years science and technology have opened up vast new fields of knowledge which have substantially altered our manner of living. Increased opportunities in professional fields, a recognition of the potential contribution of technically trained women, in addition to release from household chores have been largely responsible for the difference in the position of the Tech woman of yesterday and today. Ellen Swallow was an oddity, to be tolerated by some and marveled at by others. Today's Tech coed is an accepted member of the college group, and after graduation becomes a valuable contributing member of her profession and citizen of her community.

# When Smallpox Flourished in America

*Brought to the Western Hemisphere by Spanish*

*Explorers, Smallpox Caused Numerous Serious*

*Epidemics but Is Now Almost a Forgotten Disease*

By JAMES A. TOBEY

**S**MALLPOX, one of the most lethal and most dreaded of all diseases, virtually has vanished from the American scene. In 1953 there were only four cases of smallpox in the entire United States and in 1954 there were none, whereas 10 years earlier there were more than 400. Not so many years ago cases of this loathsome and deadly malady were numbered in the hundreds of thousands in this country, and there was a time when this scourge took off more than half of the population.

The havoc once caused by smallpox is illustrated by the situation in Boston 200 years ago. In 1752, when one of the periodic and seemingly inevitable epidemics of smallpox broke out, the population of this town was 15,684. The disease had been so prevalent in the past, however, that almost exactly 6,000 of the inhabitants already had had it, and so were immune. Another 2,124 were inoculated as a preventive measure, and 1,843 fled from Boston to escape the noxious contagion. This left about 5,700 potential victims of the disease, of whom 5,545 actually contracted it, and 569, or about 10 per cent, died. Less than 200 persons were lucky enough to evade the pestilence.

Before the Spaniards came to the Americas at the end of the Fifteenth and the beginning of the Sixteenth Centuries, smallpox was unknown in the New World, although it had flourished in the Old World since the dawn of history. The first recorded epidemic of smallpox in the Americas occurred in the West Indies in 1507, shortly after the fourth voyage of Columbus (1502-1504). Undoubtedly it was imported by a member of the crew from Europe, where the disease is known to have been rampant since the Fifth Century, when it came out of the Far East. In 1520 this terrible plague was brought to Mexico by a Negro slave in the train of the Spanish commander, Narváez. It swept across the land of the Eagle and Serpent like an unquenchable fire, and is estimated to have killed about 3,500,000 of the highly susceptible Indians. Among the victims in this great disaster was Cuitlahua, brother and successor to the Emperor Montezuma. Ten years later a similar epidemic occurred in Peru, causing a frightful mortality.

Two years before the Pilgrims landed at Plymouth in 1620, a severe epidemic devastated the Indian population in North America. It is reported that the warriors in the Northeast were reduced by it from some 9,000 to a few hundreds, and that the Massachusetts tribe alone lost 2,700 out of 3,000 persons.

The early historians thought that this was an epidemic of smallpox, but there is doubt as to the exact nature of the malady. Unquestionably, it was one of the fatal gifts of the white man's civilization, since the Indians had been in contact with these superior creatures for more than a decade. Since 1606 fishermen from England had been regularly using Monhegan Island, off the coast of Maine, as a base of operations, and explorers from the Virginia Colony, established at Jamestown in 1607, had visited and named the New England region.

The first great epidemic of smallpox among the English colonists in America broke out at Saugus, Mass., in 1631 and spread rapidly from Narragansett to Piscataqua and also westward into Connecticut. It annihilated entire villages of Indians and killed off many of the settlers. The colonists continued to come, however, since the situation was no better at home, where smallpox raged unchecked. Among the many victims of the disease in this period (1633) was Chickatabut, sachem of the Massachusetts tribe of Indians.

During the next century, smallpox came in waves to the Americas, with serious epidemics every few years. Nothing could be done about it, except to offer prayers and decree days of general fasting. The austere Puritans took some comfort from the fact that the disease so reduced the Indian population that it also diminished their capacity to make war upon the white usurpers who had often treated the Indians so treacherously. In 1663 there was a severe epidemic of smallpox among the Dutch in the New Netherlands, and in 1678 about 800 persons are said to have died of the disease in Boston and other parts of Massachusetts.

Not until 1721 did hope for the conquest of the omnipresent smallpox appear on the troubled horizon of the American colonists. In that year a Boston physician, Dr. William Douglass, handed to the Reverend Cotton Mather — the most influential and dominant of the local clergy — a treatise from the Royal Society in London describing a method of inoculating against smallpox. This paper already was four years old, but the Reverend Mather read it with enthusiasm, and decided to espouse the new method.

Inoculation had been introduced into England a few years earlier by Lady Mary Wortley Montagu, wife of the British ambassador to Turkey, who had observed the system in Constantinople. "An old woman comes," she wrote, "with a nutshell full of



the matter of the best sort of smallpox — and puts into a vein as much venom as can lie on the head of a needle, and binds up the wound with a hollow bit of shell." Inoculation of the skin in this way usually resulted in much milder cases than those contracted in the customary manner through the respiratory tract, but occasionally an inoculated person suffered a severe bout of the disease and even died of it. In that day and age the chance seemed worth taking, since the mortality from inoculation was about one-tenth of the natural infection.

Reverend Cotton Mather promptly wrote a fervid pamphlet about inoculation. He endeavored to arouse the interest and support of the local doctors, but with one notable exception they opposed him to a man. Most of the clergy were impressed, however, and lined up with Mather. The one physician who had faith in inoculation was Dr. Zabdiel Boylston, who on July 27, 1721, inoculated his own son and two of his Negro slaves — with successful results.

The resulting furor split Boston into two violently opposing camps. The Franklins, James and Benjamin, launched a bitter attack on Boylston in their newly established newspaper. The doctor was mobbed when he went out, and had to visit his patients secretly at night. A bomb was sent to Mather, with a scrawled note, "I will enoculate you with this, with a Pox to you," but fortunately it failed to explode. Mather, noted among other things as a witch burner, paid his respects to his detractors in vitriolic language, calling them "Ideots and Franticks," and mentioning "the cursed clamor of a people strangely and fiercely possessed by the Devil." The courageous clergyman practiced what he preached, and had his own son inoculated; he recovered without any ill effects.

The excitement continued for some time, but eventually other physicians came to the support of Boylston, and inoculation was vindicated. In due course, Boston named a street after Boylston, a street which

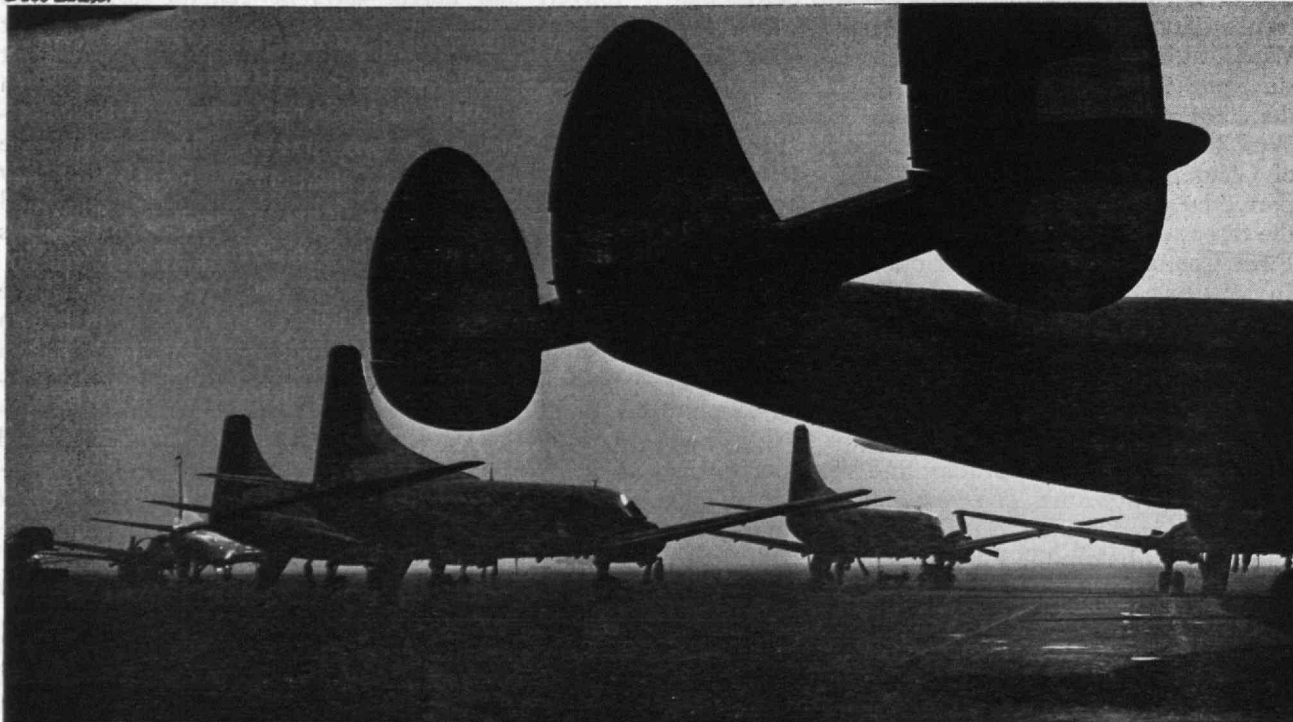
later (1865) became the site of a famous institute devoted to engineering education (M.I.T.). Benjamin Franklin, who had moved to Philadelphia, also changed his tune. After losing a four-year old son from smallpox in 1736, he became a staunch advocate of inoculation.

In 1751 a young man of 19 named George Washington, accompanied his half-brother, Lawrence, to the Barbados in search of a more salubrious climate for the latter's consumptive condition. In the West Indies, George Washington was exposed to the prevalent smallpox and contracted it. Fortunately, he recovered, but displayed pock marks on his face the remainder of his life — stigmata which do not appear in the portraits painted by Gilbert Stuart and other famous artists. In later years George Washington prescribed inoculation for his troops, and also persuaded his wife to take it. Of four hospitals established in the early days of the American War for Independence, one was exclusively for smallpox.

The expedition against Quebec, so gallantly led by Benedict Arnold in 1775, was frustrated by smallpox and other diseases. Colonel Arnold, his reputation then proud and unsullied, set out from Cambridge on September 17 with 1,100 troops, proceeded to Newburyport, and up the Kennebec some 30 miles beyond Norridgewock. Then came 100 miles of incredible hardships through the savage wilderness. Nearly one-half of the force sickened or died of smallpox and dysentery, or succumbed to cold and hunger. When the weary, enfeebled troops arrived before Quebec in the middle of November, they were too exhausted to attack. Had they been able to do so, the surprise assault might well have been successful, and the history of this country might have been different. After General Montgomery joined Arnold and the attack was made in mid-December, the British had been able to fortify their positions strongly, and the attack was repulsed. Montgomery was killed,

*(Continued on page 119)*

Dave Lavelor



# THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

## Presidential Adviser

**M**AJOR GENERAL JAMES MCCORMACK, JR., '37, U.S. Air Force (retired), former Director of Research and Development in Air Force Headquarters in Washington, has been named a special adviser to the president of M.I.T. A former Deputy Commander and Vice Commander of the Air Force Research and Development Command, General McCormack has recently served as the Director of Research and Development in the Office of the Deputy Chief of Staff (Development) in the Headquarters of the United States Air Force in Washington. Previously he had served on assignment from the Department of Defense as Director of Military Applications in the Atomic Energy Commission.

"General McCormack has a wide background in problems in which M.I.T. is directly concerned, or is very much interested," said James R. Killian, Jr., '26, President of M.I.T., in announcing the appointment.

"His advice will be of great value in the fields of military operations research, in which the Institute is assisting the Department of Defense, and in administering the Institute's wide program of sponsored research."

A graduate of West Point in 1932, General McCormack subsequently studied as a Rhodes Scholar at Oxford University, where he received the degree of bachelor of arts in 1935. In 1937 he took the degree of master of science in Civil Engineering at M.I.T. General McCormack has served as an Engineer Officer in successive grades in the Army (1932-1941), general staff officer in the War Department (1942-1946), with the 12th Army Group in Europe (1944-1945), with the Atomic Energy Commission (1947-1951), in the Air Force Research and Development Command (1951-1954), and most recently in Headquarters, U.S. Air Force, Washington, D.C.

He has received the Distinguished Service Medal, Legion of Merit with Oak Leaf Cluster, Bronze Star Medal, Legion of Honor (French), Croix de Guerre with Palm, and the Order of the British Empire.

## Treasurer's Report

**I**N reporting on the Institute's financial condition to the M.I.T. Corporation on October 3, Joseph J. Snyder, 2-44, Vice-president and Treasurer, stated that the Institute's operating budget for the year was balanced, all construction projects in progress were financed, and it was possible to make additions to the funds of the Institute as required under established financial policies.

Unrestricted funds were drawn on heavily to meet operating expenses and capital expenditures, but these funds were maintained at the minimum level considered prudent in the light of the scale of the Institute's operations. The importance of applying unrestricted resources for improving existing facili-

ties and programs, as well as to financing new undertakings, has been given careful attention. The increase in endowment and tuition combined should keep pace with the increase in academic expenses composed largely of direct salaries and wages. Income from endowment will need to move ahead more rapidly than academic expenses if an increasing proportion of these expenses is to be funded. The tuition increase, effective in 1956-1957, and approved by the Corporation during the year, will provide long-term financing of scholarships and salary and wage increases granted recently but now being met temporarily by other means.

The principal items in the Institute's operations for the past two fiscal years are shown, with the net change, in the following table:

Operation	1953-1954	1954-1955	Increase
Academic operations	\$13,693,000	\$14,813,000	\$1,120,000
Endowment funds	46,058,000	48,056,000	1,998,000
Total funds	68,011,000	73,833,000	5,822,000
Gifts and grants	4,642,000	6,650,000	2,008,000
Plant assets	34,417,000	36,086,000	1,669,000
Investments:			
Market value	85,648,000	109,344,000	23,696,000
Book value	63,084,000	71,831,000	8,747,000
Cost of sponsored research:			
Division of Industrial Coöperation	15,240,000	9,568,000	-5,672,000
Division of Defense Laboratories	17,248,000	27,708,000	10,460,000

The decrease in the direct expenses of the Division of Industrial Coöperation and the increase in those of the Division of Defense Laboratories, were primarily due to transfer of the Instrumentation Laboratory and other projects to the Division of Defense Laboratories.

Academic operations for the past two fiscal years are compared in the following table:

Revenues and Funds	1953-1954	1954-1955
Tuition and other income	\$4,487,000	\$4,673,000
Investment income	1,232,000	1,259,000
Gifts and other receipts	2,775,000	3,560,000
Contract allowances for indirect expenses	3,472,000	3,543,000
Auxiliary activities	1,727,000	1,778,000
Total	\$13,693,000	\$14,813,000
Expenses		
Academic	\$6,157,000	\$6,142,000
General and administrative	3,491,000	3,919,000
Plant operations	2,318,000	2,975,000
Auxiliary activities	1,727,000	1,777,000
Total	\$13,693,000	\$14,813,000

Grants and funds included in gifts and other receipts were drawn on more heavily than last year to meet academic expenses and increased plant operation expenses, leaving other sources of income available for the increase in general and administrative



expense. Academic salaries and wages were higher, but total academic expenses were little changed, because special nonrecurring expenses decreased from the preceding year. Improved employee benefits, higher development expenses, and increased salaries and wages accounted for most of the change in general and administration expenses. Building space changes, major construction alterations, and special maintenance work made up the large increase in plant operations expense.

The continuing growth of gifts to the Institute is reflected in the following table:

<i>Designation</i>	<i>1953-1954</i>	<i>1954-1955</i>
Endowment	\$760,000	\$611,000
Buildings	274,000	1,531,000
Current use — invested	726,000	1,893,000
Industrial Liaison support	1,225,000	817,000
Other funds for current use	1,657,000	1,523,000
Gifts of real estate		275,000
Total gifts	\$4,642,000	\$6,650,000

The greater gifts for building funds reflected the successful efforts to secure the funds for the Karl Taylor Compton Laboratories and the nuclear reactor, and the funds for current-use invested included the splendid achievement of the Alumni Fund for the Compton Memorial. Construction has been undertaken on the Compton Laboratories, and the financing of the structure has been assured through funds on hand, contributions pledged, and use of unrestricted funds. The new building will add 11 classrooms — bringing the total at the Institute to 147.

### ***St. Louis Regional Conference***

**A**NTICIPATING a favorable nod from the weather man for the date of Saturday, February 4, 1956, five administrative officers and Faculty members from the Institute are planning to speak at the regional conference which is to be held at the Missouri Athletic Club in St. Louis. The conference is sponsored by the Alumni Association and the M.I.T. Club of St. Louis. Under the general title of "Today's Research and Its Impact on Tomorrow," Alumni and guests attending the conference will hear messages from James R. Killian, Jr., '26, President of M.I.T., two of the Institute's deans, and two professors.

George R. Harrison, Dean of the School of Science, will speak on "Frontiers of Science" and E. P. Brooks, '17, Dean of the School of Industrial Management, will present his views on "Today's Plans for Tomorrow's Management." The topic to be discussed by John G. Trump, '33, Professor of Electrical Engineering, is "High Voltage Particles and Radiation in Medicine and Industry." Also included on the program is a talk on "Nuclear Reactors as a Tool for Industry and Education."

The success of the regional conferences held last year in Dallas and Cleveland augurs well for the gathering in St. Louis which will emphasize research conducted at the Institute and the effect of this research in the future.

Inquiries and reservations for this event on February 4 should be directed to: Robert J. Joyce, '28, 802 Chestnut Street, St. Louis 1, Mo.

### ***SAGE Council***

**T**HE first meeting of the Alumni Council for the 1955-1956 season was held at the M.I.T. Faculty Club, 50 Memorial Drive, Cambridge, at 7:45 P.M. on Monday, October 31. At this 312th meeting of the Council, Dwight C. Arnold, '27, President of the Alumni Association for the current year, presided. Upon conclusion of the dinner, Mr. Arnold introduced James R. Killian, Jr., '26, President of M.I.T., as the first speaker of the evening.

In reporting on recent activities at the Institute, Dr. Killian announced the establishment of a fund from Henry Ford, 2d, to be used for making an annual "Atoms for Peace" award, as reported in the November, 1955, issue of *The Review* (page 35). Members of the committee administering the "Atoms for Peace" awards, under the chairmanship of President Killian, are: Detlev W. Bronk, Ralph J. Bunche, Arthur H. Compton, Mrs. Douglas Horton, Mervin J. Kelly, and Alan T. Waterman. Dr. Killian announced the bequest of \$1,000,000 to the Institute by David F. du Pont, '56, whose untimely death came as he was about to enter his senior year at the Institute. The David du Pont bequest is to be used for athletic purposes, as reported in the November, 1955, issue of *The Review* (page 37).

President Killian also reported that the fall term registration of 5,648 students represents an 80 per cent increase in enrollment over that of a decade ago. As a result, the Institute finds itself confronted by a shortage of housing facilities for undergraduate and graduate students — single and married — despite its program of providing substantial increase in the number of residential units since the end of World War II. A committee, of which Edwin D. Ryer, '20, is chairman, is now studying possible solutions to the housing shortage which, if not corrected immediately, may be expected to become serious with the anticipated increase in college enrollment in the next few years.

On behalf of the Audit and Budget Committee, Mr. Ryer reported that the budget for the Alumni Association for the year 1955-1956 had been approved, that accounts for the Association for the past year had been audited, and that a copy of the Auditor's Report is on file in the Treasurer's Office. The Association's budget for the 1954-1955 fiscal year was \$61,271, and total disbursements exceeded this figure by \$1,986. For at least the third consecutive year, the Association's deficit has been converted to a profit, by taking advantage of sound business and editorial operations of *The Review*, which for more than a quarter of a century has shown an excess of income over expenses.

As Secretary of the Association, Donald P. Severance, '38, reported that changes in class affiliations for three Alumni had been approved. Between May 26 and October 31, visits had been made by 12 members of the staff to 18 M.I.T. clubs as far away as Mexico City, Los Angeles, Duluth, and Philadelphia. The Committee on Nominations for Departmental Visiting Committees was reported to have submitted four renominations and 17 new nominations for alumni membership on the Visiting Committees.

*(Continued on page 102)*

# BUSINESS IN MOTION

## *To our Colleagues in American Business ...*

When close dimensional tolerances are required in an extruded shape, plus heightened tensile strength, and a fine finish, the shape is drawn through a die after extrusion. If there are special requirements as to straightness, the shape may also be straightened, as necessary, either by hand or by machine. These processes are expensive, but they produce a product that is accurately pre-formed, so that machining is markedly reduced, so much so as to effect remarkable savings. However, there is another way to take advantage of the economy of extruded shapes. Sometimes a "plain extruded" shape will do, thus saving the time and expense of drawing and straightening.

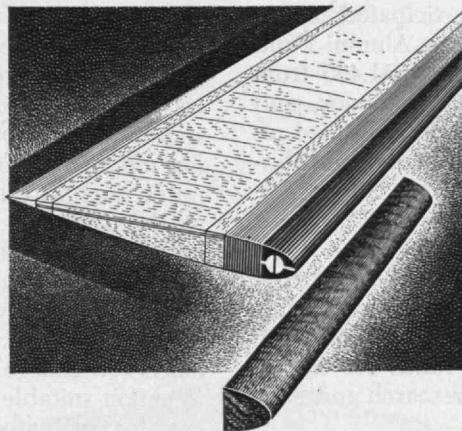
It all depends on what is really needed. Revere had an outstanding example of this recently. A rush order was received, and we could not meet the requested delivery date because of the time required to make new extrusion dies. On being told this, the purchasing agent visited our mill to see what could be done. A mutual study of the facts showed that the shape is to be applied to the leading edges of helicopter blades, and that both the shape and the wood are routed to make a close fit for the application of an adhesive. The shape is also tapered. Several things became evident. First, the original specifications were tighter than required. Second, shapes produced by the customer's original die, in our possession, would be slightly oversize, but not enough to be significant, in view of the subsequent machining. Third, by using

that original die, and eliminating drawing, we could fill the order on time — and save the customer six cents a pound as well.

Now that we both knew that some of the dimensional and physical tolerances were not absolutely necessary, Revere was able to go ahead. The die was put in one of our extrusion presses, the metal forced through it, cut off to exact lengths, and shipped. This made it possible for the customer to complete his first blade on the day specified in his contract. We all

worked fast, but no matter how quickly we labored, we could not possibly have met the essential delivery date on the basis of the original specifications. Close collaboration on what we call Quality Control provided the solution. Incidentally, brass was chosen for the part, because of its density, its resistance to corrosion, and the ease with which it can be machined.

Both our customer and ourselves are proud of the accomplishment reported here. It was made possible only by a thorough examination by both of us of the entire background of the order, the fabrication methods and end use, plus what the mill could do if it did not have to make new dies. We would like to suggest that when, as sometimes happens, a supplier cannot meet a date on a special order, you sit down with him and examine specifications to see if they really need to be so tight. You may find that a more or less run-of-the-mill product will do, thereby saving much time and money too.



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## THE INSTITUTE GAZETTE

(Continued from page 100)

These nominations have the approval of the Executive Committee. Also reported by the Secretary was the official recognition, by the Executive Committee, of the newly established M.I.T. Club of Israel. It was also announced that Chenery Salmon, '26, chairman, had appointed C. Yardley Chittick, '22, William H. Carlisle, Jr., '28, Vincent T. Estabrook, '36, and John W. Sheetz, 3d, '42, to serve with him on the important Midwinter Meeting Committee. This meeting will be held in Walker Memorial on February 2, 1956.

Samuel C. Prescott, '94, chairman of the Committee on Resolutions, read a resolution on the late Arthur T. Chase, '86, formerly a member of the Alumni Council. The resolution was unanimously accepted by a silent rising vote.

Theodore T. Miller, '22, chairman of the Alumni Fund Board, reported that 11,176 Alumni had contributed to the Fund for the past year; this figure represents 1,500 more Alumni than had contributed for the previous year. Of the Alumni Council, 96.6 per cent of its members had contributed, whereas 34 per cent of the alumni body participated in last year's Fund. Total contributions to the Alumni Fund for the year 1954-1955 amounted to \$551,485 from Alumni, \$514,705 from an anonymous donor, and \$150,000 which was withdrawn from accumulated resources of the Alumni Fund. Thus, the total contributions for which the 1955 Alumni Fund is responsible through alumni giving amounted to \$1,215,000 — a most impressive record indeed.

For the coming year, Mr. Miller announced that the Alumni Fund has two specific objectives which it believes to be worthy of special support. One of these is support for general scholarship funds for M.I.T. students; the other is for funds for research and education in medical science.

President Arnold then introduced Edward L. Cochrane, '20, Vice-president for Industrial and Governmental Relations, who spoke briefly on the Institute's criteria for undertaking sponsored research for the government or industry. The five criteria which the Institute uses in accepting or continuing sponsored research projects are that: (1) M.I.T. has exceptionally qualified personnel, unusual experience, or special equipment for conducting the project, and one or more of its Faculty members are willing and able to assume responsibility for the project; (2) the project can remain unclassified and can be administered with a minimum interruption of the Institute's educational and basic research programs; (3) students may participate in the research as a part of their educational program; (4) the project does not involve the Institute in a major financial outlay; and (5) personnel and space can be made available for the proper conduct of the project. Compelling national interests sometimes require that the Institute undertake sponsored research when these criteria cannot be fulfilled or when the Institute derives no particular educational benefit from such work for either its students or its Faculty.

Project Lincoln, housed in government-provided facilities at the Bedford Airport, is an example of a multimillion-dollar project whose administration was undertaken several years ago when it became clear that the national interest required the Institute to take such action. For several years, Albert G. Hill, Professor of Physics, headed Lincoln Laboratory until he requested that he be allowed to return to academic work last summer. Marshall G. Holloway, who has had extensive scientific and administrative experience in government-sponsored classified research, has recently assumed direction of the Lincoln Laboratory, and Admiral Cochrane took obvious pleasure in introducing Dr. Holloway to members of the Alumni Council.

In his response to Admiral Cochrane's introduction, Dr. Holloway expressed his pleasure at being selected to head Lincoln Laboratory, and his further pleasure at being affiliated with the Institute in this new assignment. Dr. Holloway spoke of the very important and necessary job being done by the Lincoln Laboratory as part of the nation's defense preparations, and stated that the Semi-Automatic Ground Environment activities, shown in a motion picture as the final feature of the meeting, were but part of the contributions which Lincoln Laboratory was making to national security.

Final event on the program was the showing of a color film on the Semi-Automatic Ground Environment — abbreviated SAGE — system. This film portrayed the methods by which data from ground radar stations, Texas towers, picket ships, and early warning aircraft are fed to a large-capacity digital computer, such as the Whirlwind I computer developed at the Institute. Information relating to attacking enemy air-borne craft is obtained from radar systems and is fed to computers which carry out functions of identifying enemy aircraft, and plotting and predicting their courses. On the basis of such information, officers in charge of tactical operations may commit to action suitable defensive weapons, whose courses are also calculated by the computer. The SAGE system is able to direct defensive weapons to their targets with a minimum of human intervention. The meeting was adjourned at 9:15 P.M.

### Hawthorne Now Hunsaker Professor

WILLIAM R. HAWTHORNE, '39, has been appointed to the distinguished new Faculty post of Jerome Clarke Hunsaker Professor of Aeronautical Engineering at the Institute for the current academic year, according to an announcement by James R. Killian, Jr., '26, President. Dr. Hawthorne is on leave from Cambridge University, England, where he holds the Hopkinson and Imperial Chemical Industries Professorship of Applied Thermodynamics. His principal interests are the fields of aircraft propulsion and advanced fluid mechanics; at M.I.T. Dr. Hawthorne will divide his teaching efforts in these fields between the Departments of Mechanical and Aeronautical Engineering.

Commenting on this appointment, C. Stark Draper, '26, Head of the Department of Aeronautical Engi-

(Continued on page 104)

B  
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Gentlemen:

Since I was a little girl (ancient history as I have a teenage grandson), I have been a constant user of telephone conveniences -- home, business and social-wise. Therefore my heretofore unexpressed appreciation I am now expressing in just, "Thank you."

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Very truly yours,  
Alberta F. Barse.

## "Never More than a Call Apart"

We received a very nice letter from a woman on Long Island, N. Y., the other day and we thought you might like to share it with us.

Mrs. Barse's letter is typical of the many we receive from people who are kind enough to write

about the value of their service and the friendliness and help of telephone people.

Such letters are not only pleasant to receive but an encouragement to all of us to do even better in the days to come.



MRS. ALBERTA F. BARSE.

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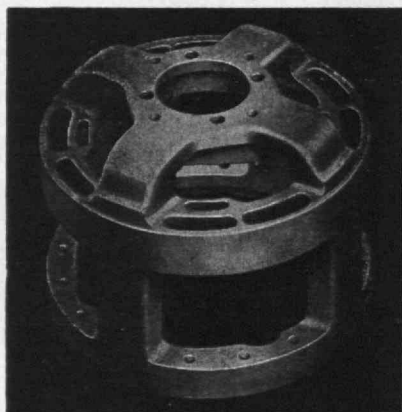




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Geo. Swift '24 Ed Beaupre '41

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## THE INSTITUTE GAZETTE

(Continued from page 102)

neering at M.I.T., said: "The rapid pace of new developments in aircraft propulsion and aerodynamics is well known. Dr. Hawthorne's appointment emphasizes the great and increasing importance of these fields in the engineering of aircraft."

While at M.I.T. as Hunsaker Professor, Dr. Hawthorne will deliver the Minta Martin Aeronautical Lecture, which may be repeated in other aeronautical centers throughout the nation in order to emphasize the national character of this new professorship.

The Jerome Clarke Hunsaker Professorship was established in 1954 in honor of Professor Hunsaker, founder and for many years Head of the Department of Aeronautical Engineering at M.I.T. and a leading figure in American aviation. Professor Hunsaker first came to the Institute in 1909 as a graduate student after having been graduated from the U.S. Naval Academy at Annapolis. At M.I.T. he organized the first Course in Aeronautical Engineering in the United States.

The Hunsaker Professorship is funded by gifts to the Institute from industry and individual donors, now totaling over \$360,000. It is hoped that additional gifts will increase the fund to the ultimate goal of \$500,000. The professorship honoring Dr. Hunsaker was conceived and brought to realization largely through the initiative and efforts of Major Lester D. Gardner, '98, of New York, an alumnus of the Institute and one of the founders of the Institute of the Aeronautical Sciences.

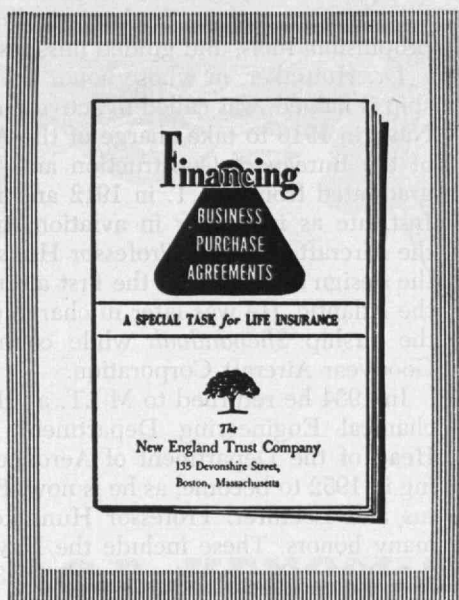
Dr. Hawthorne was born in Benton, England, in 1913. In 1934 he received the bachelor of arts degree from Cambridge University. After a year's service as a graduate apprentice with the firm of Babcock and Wilcox, Ltd., he came to M.I.T. as a Commonwealth Fund Fellow and completed work for his doctor of science degree in fuel engineering in 1939. Dr. Hawthorne then returned to England to join Babcock and Wilcox as a development engineer, working on combustion, heat transfer, and problems of steam generation.

From 1940 to 1944 he was scientific officer and head of the Gas Turbine Division at the Royal Aircraft Establishment in Farnborough, engaged in work on gas turbines and jet propulsion. During this period he worked on combustion chamber development with Sir Frank Whittle, who built the first jet engine. Professor Hawthorne came to this country with the British Air Commission in Washington in 1944 and later returned to England to become deputy director of engine research at the Ministry of Supply (Air) in London. He was awarded the U.S. Medal of Freedom in 1946 for his jet engine work.

In 1946 Dr. Hawthorne returned to M.I.T. to serve as Associate Professor of Mechanical Engineering and in the following year was appointed George Westinghouse Professor of Mechanical Engineering. He was the first to fill this chair and did so with distinction for three years, in association with the In-

(Continued on page 106)

# What is your business worth to your family?



Sometimes a business has to be sold when the owner dies—there's no one in the family who is willing or able to carry it on.

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sale price stipulated in the agreement—your family is protected.

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Our booklet "Financing Business Purchase Agreements", describes tested methods for financing business purchase-and-sale agreements. Tax aspects are discussed—including the new and more liberal rules in the 1954 tax law dealing with the redemption of stock held by estates. Visit or write our Trust Department for your copy.

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# Westinghouse

## THE INSTITUTE GAZETTE

(Continued from page 104)

stitute's Gas Turbine Laboratory. In 1951 he returned to Cambridge University to accept the newly created applied thermodynamics professorship at that institution.

Dr. Hawthorne is a Fellow of both the Royal Society and the Royal Aeronautical Society and of Trinity College, Cambridge. He is a member of the Institute of the Aeronautical Sciences and of the Institution of Mechanical Engineers and a Fellow of the American Academy of Arts and Sciences. He has served on many governmental committees both in this country and in England dealing with aircraft propulsion, fuels, and guided missiles.

Dr. Hunsaker, in whose honor this new professorship is named, was called to active duty with the U.S. Navy in 1916 to take charge of the Aircraft Division of the Bureau of Construction and Repair. He was graduated from M.I.T. in 1912 and remained at the Institute as instructor in aviation. In his post with the Aircraft Division, Professor Hunsaker supervised the design of the NC-4, the first aircraft to fly across the Atlantic. He was later in charge of the design of the airship *Shenandoah* while connected with the Goodyear Aircraft Corporation.

In 1934 he returned to M.I.T. as Head of the Mechanical Engineering Department. He retired as Head of the Department of Aeronautical Engineering in 1952 to become, as he is now, Professor Emeritus and Lecturer. Professor Hunsaker has received many honors. These include the Navy Cross (1919), the Daniel Guggenheim Medal (1933), the Franklin Medal (1942), the Presidential Medal for Merit (1946), the French Legion of Honor (1949), the Wright Brothers Memorial Trophy (1951), the Godfrey L. Cabot Trophy (1953), and the Langley Medal (1955).

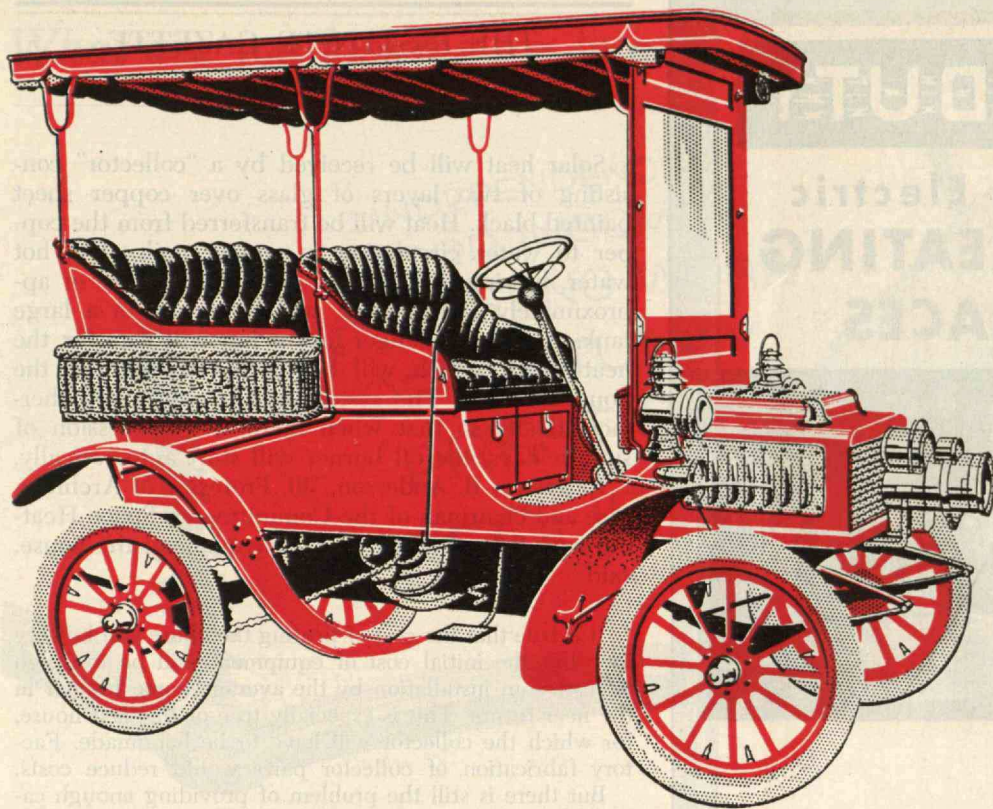
### **New Solar House Planned**

**P**LANs to build a full-scale, sun-heated house were announced by M.I.T. professors taking part in the World Symposium on Applied Solar Energy at Phoenix, Ariz., early in November. The house will be built in the Boston area this winter and is expected to be completed next spring. The M.I.T. interest is chiefly in testing solar heating and the house will be sold to a family who will live in it while data are gathered.

Since sunshine is undependable in New England during the winter, an auxiliary oil-heating plant will be needed, but solar energy is expected to supply from 80 to 90 per cent of the heat for the house and the oil bill for the year should not total more than \$50. Solar energy will also supply an abundance of domestic hot water year around. An air-cooling system will operate during the summer. A great deal of the information used in designing the house was obtained from tests on a small house built in 1948 on the M.I.T. campus, facing Memorial Drive, and occupied today by a student and his family.

(Concluded on page 108)





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In 1904, the Rambler looked like this. It had a two-cylinder engine which developed 16 horsepower, and could go 40 miles per hour with a strong tail wind. It burned gasoline produced by straight distillation of petroleum.

Engineers and chemists, Lummus men among them, were just beginning to experiment with crude oils to increase yields and quality of gasoline for internal combustion engines.

Since this early start, Lummus engineers have consistently made important contributions to the progress of the petroleum industry. These include the early design of some of the first efficient continuous gasoline recovery facilities, and the first modern lubricating oil manufacturing plants. More recently, Lummus has been a forerunner in the design and construction of facilities for producing high octane gasolines by operations employing catalysts. Currently, Lummus is making important contributions in the burgeoning field of petroleum-derived chemicals.

Since the 1904 Rambler took the road, Lummus has designed, engineered and constructed over 700 major installations. These range from complete petroleum refineries to plants for making chemicals like ammonia and ethylene.

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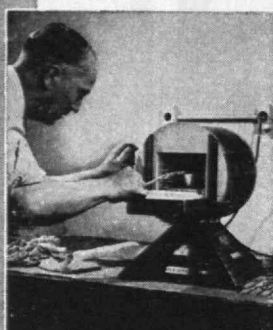
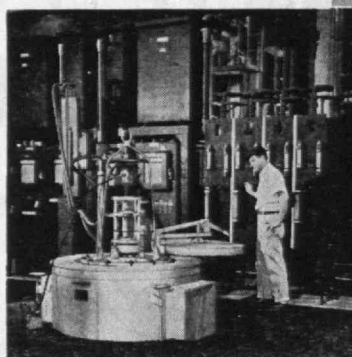
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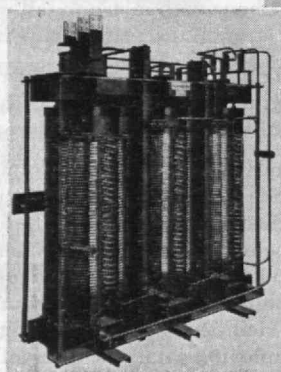


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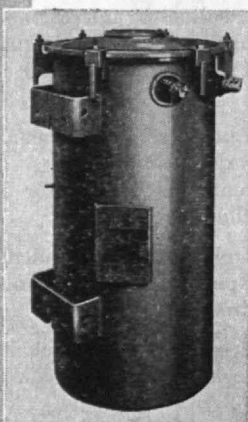
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## THE INSTITUTE GAZETTE

(Concluded from page 106)

Solar heat will be received by a "collector" consisting of two layers of glass over copper sheet painted black. Heat will be transferred from the copper to water circulating in copper coils. The hot water, leaving the collector at a temperature of approximately 150 degrees, will be stored in a large tank. A heat exchanger and a fan will transfer the heat to air which will be carried throughout the house in ducts. The system will be controlled thermostatically so that when there is a succession of sunless days, the oil burner will start automatically.

Lawrence B. Anderson, '30, Professor of Architecture and chairman of the Committee on Space Heating with Solar Energy which has planned the house, said:

It is true that the cost of heating the house will be very low, but the initial cost of equipment will be too high to justify an installation by the average home builder in the near future. This is especially true of this first house, for which the collector will have to be handmade. Factory fabrication of collector parts would reduce costs.

But there is still the problem of providing enough capacity in the solar-heating system to take care of the stretches of cloudy weather. We could theoretically store enough solar heat for long periods of cloudy weather, but to store enough heat for even 10 days would require such an enormous storage system that it appears out of the question. Therefore we have added a conventional auxiliary heater as a lesser evil.

Solar heating is probably now economically feasible in areas where there is ample clear weather and where the cost of fossil fuels is abnormally high. We hope through further research to solve some of the problems that make it unfeasible for other conditions.

Professor Anderson was moderator for a discussion on "The Architectural Problem of Solar Collectors" at the conference in Phoenix. In another session, Hoyt C. Hottel, '24, Professor of Fuel Engineering at M.I.T., spoke on "Residential Uses of Solar Energy." Also speaking on the program was Austin Whillier, '53, who formerly was engineer-in-charge of the M.I.T. Solar House.

Lawrence J. Heidt, Associate Professor of Physical Chemistry at M.I.T., spoke at the symposium on "Converting Solar Energy to Chemical Energy," describing further studies of a method, first disclosed in 1953, by which water in certain solutions is converted into oxygen and hydrogen by light.

In addition to Professors Anderson and Hottel, members of the Committee on Space Heating with Solar Energy are: Albert G. H. Dietz, '32, Professor of Building Engineering; August L. Hesselschwerdt, Jr., '31, Associate Professor of Mechanical Engineering; and Joseph Kaye, '34, Professor of Mechanical Engineering. They have been assisted in planning the new solar house by Dr. Whillier; Richard W. Hamilton, '50, research associate in Architecture; Robert J. Pelletier, '51, research associate in Civil Engineering; and Bernard P. Spring, '51, instructor in Architecture.

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## TREND OF AFFAIRS

(Continued from page 86)

at its resonant frequency. The combination of crystals, inductances, and capacitors in filter networks by Warren P. Mason made possible the many present-day applications of crystal filters.

Because of the very low dissipation inherent in the quartz resonator, it is possible to make filters with very high selectivity. Crystal filters are used in noise and sound analyzing devices which permit frequency spectra to be determined with very high resolution, in carrier systems for separating out control frequencies, and in radio communication systems for selecting harmonics of local oscillator signals. In addition, they have been applied to carrier telephone systems, where they permit the use of very small channel spacings; to single side-band systems for separating the two side bands; and to amplifiers where very high selectivity is desired.

Except for their use in carrier telephony, widespread application of crystal filters has been inhibited by lack of simple design techniques, and by lack of effective and inexpensive means for manufacturing crystals to the close tolerances required for filter applications.

A project which has recently been completed in the Institute's Research Laboratory of Electronics has been concerned with the development of new techniques for the synthesis and realization of filters employing piezoelectric resonators. As a result of this research, the availability of economical crystal filters to industry and research laboratories may be substantially increased.

The procedure developed permits very rapid solution of the crystal filter synthesis problem, with sufficient accuracy for determining whether or not the filter is realizable in terms of the properties attainable from a crystal resonator. The synthesis procedure is essentially based upon two types of approximations. The first approximation permits the attenuation, phase, and image impedance characteristic of a band-pass filter to be normalized with respect to bandwidth and center frequency. A single set of normalized characteristics is sufficient to describe all possible band-pass crystal filters with negligible practical error. A graphical method has been derived which

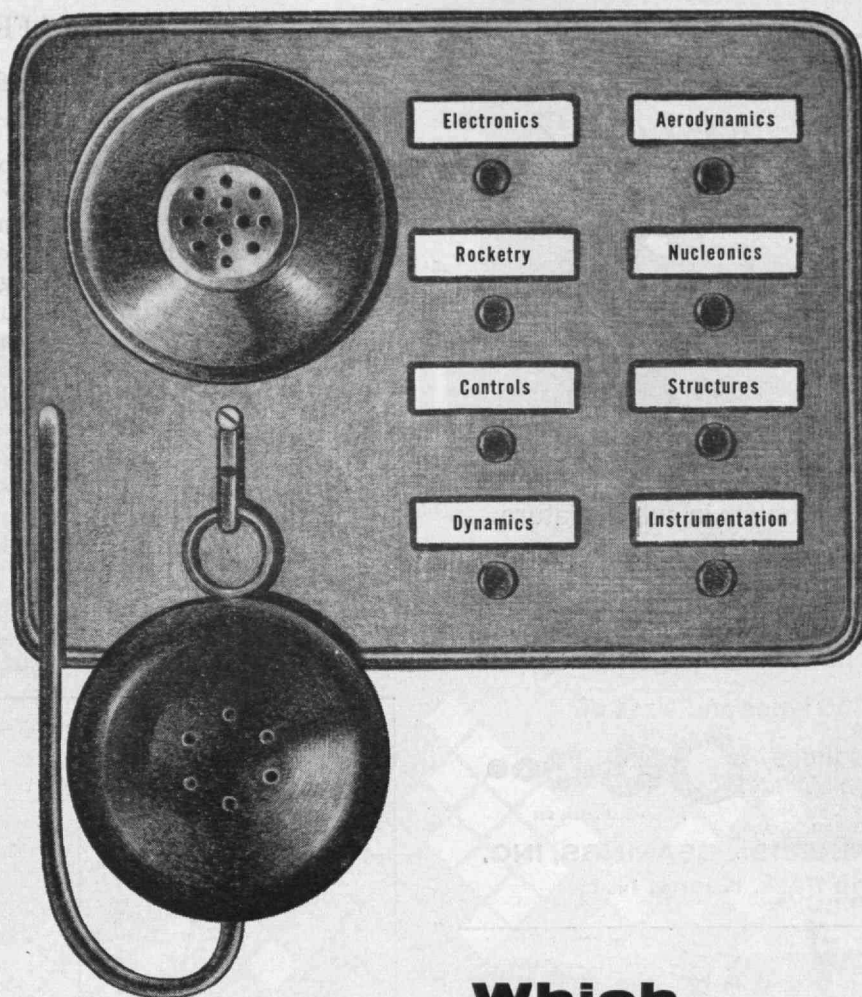
(Continued on page 112)



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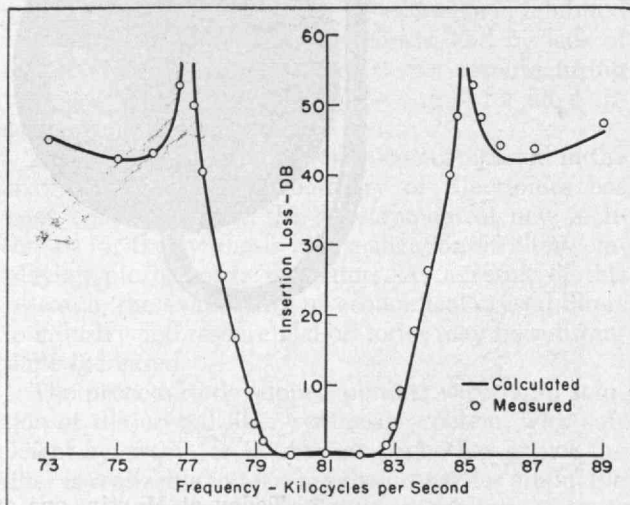
## TREND OF AFFAIRS

(Continued from page 110)

greatly simplifies the determination of the attenuation characteristic necessary to satisfy a given set of filter specifications. The analytical simplicity afforded by the normalization technique makes possible calculations of all filter losses, including the effects of incidental dissipation, with a minimum of effort.

The second approximation mentioned above is one which permits the element values of the reactances which are employed in a crystal filter, to be calculated in terms of the difference between the critical frequencies of the reactances. With the aid of this approximation and the normalization already described, the filter design may be accomplished very rapidly using only a slide rule and a number of simple plotted curves.

In addition to the synthesis methods described, a number of important techniques relating to the realization of crystal filters have been evolved. For ex-



Quartz crystal band-pass filter whose calculated performance is shown by solid line; circles indicate filter behavior as measured.

ample, analytical methods have been derived for determining restrictions on crystal filter band-widths and attenuation characteristics, without carrying through the corresponding synthesis. Moreover, the specification of tolerances on crystal units has been greatly simplified by a technique which permits the analytical determination of permissible variations of crystal parameters, in terms of the corresponding effect upon filter attenuation. Perhaps the most significant contribution to filter realization, in terms of the procurement of crystal resonators for filter applications, has been the development of a device which permits the crystal manufacturer to adjust the electrical parameters of the crystal unit to the required tolerances, without elaborate or specialized testing equipment.

Because of the low dissipation and high stability of the crystal element, a very close agreement may be expected between the calculated and measured

(Concluded on page 114)

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## TREND OF AFFAIRS

(Concluded from page 112)

characteristics of a crystal filter. To illustrate this agreement, the insertion loss of one of the band-pass crystal filters constructed at the Research Laboratory of Electronics is shown on page 112. The filter is realized in the form of a symmetrical lattice and employs two crystal units, two inductances, and several small ceramic capacitors.

A description of this research is contained in a doctoral thesis by David I. Kosowsky, '52, research assistant in the Department of Electrical Engineering, supervised by Henry J. Zimmermann, '42, Professor of Electrical Engineering. The encouragement and assistance received from Professors Jerome B. Wiesner, Ernst A. Guillemin, '24, and Samuel J. Mason, '47, all of the Department of Electrical Engineering, are also gratefully acknowledged.

The significant portions of the thesis have been published in a Technical Report of the Research Laboratory of Electronics. The work was sponsored in part by the Army Signal Corps, the Office of Naval Research, the Office of Scientific Research and Development, and the Air Research and Development Command.

## ENGINEERING EDUCATION

(Continued from page 93)

into the nature of engineering as a profession. For this idea of engineering as a profession in the highest sense, and of the engineer as a professional man, should have stronger roots than the mere bond of school or occupation.

Medicine, I believe, is the art and science dealing with the prevention, cure, or alleviation of disease. Likewise, engineering has been defined as the art and science by which the properties of matter and the sources of power in nature are made useful to man in structures, machines, and manufactured goods. Deeper than all such definitions are the processes of thought, the attitudes of mind, the sets of values that distinguish the engineer from the doctor, the lawyer, or the physicist. The engineer must have developed an innate sense and feel for the physical

(Continued on page 116)

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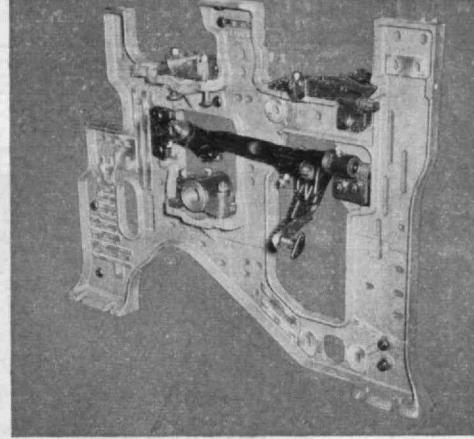
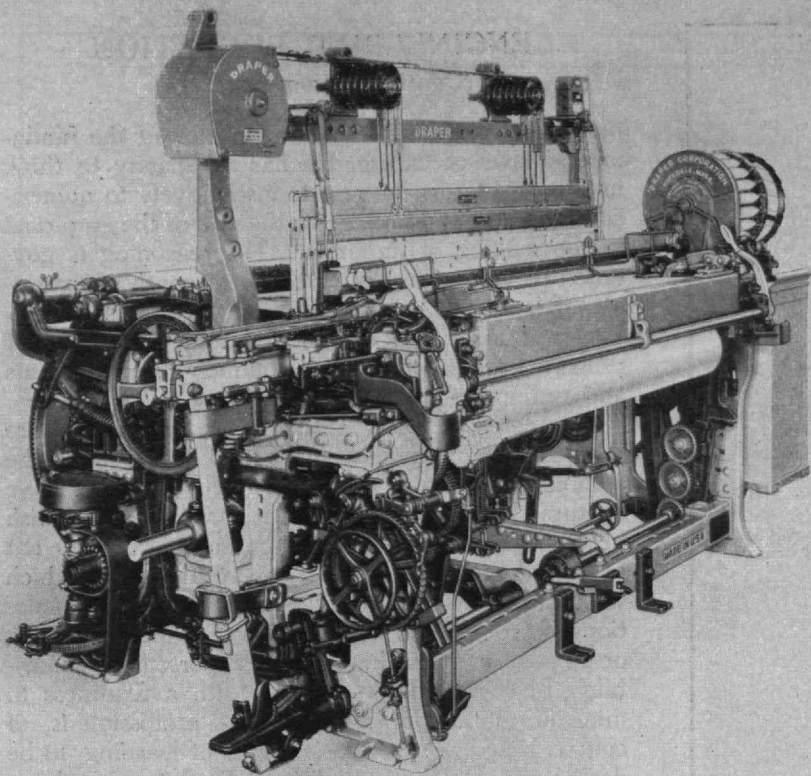
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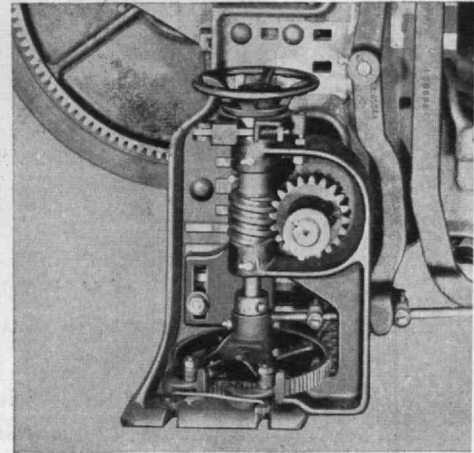
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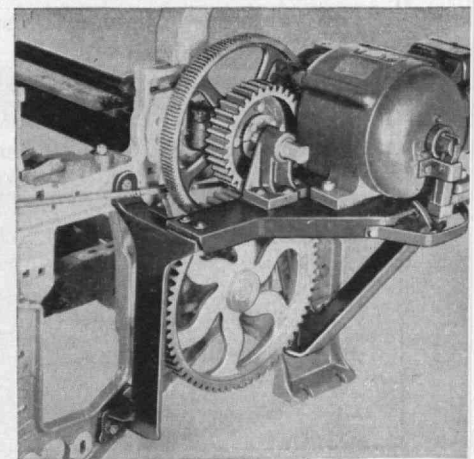
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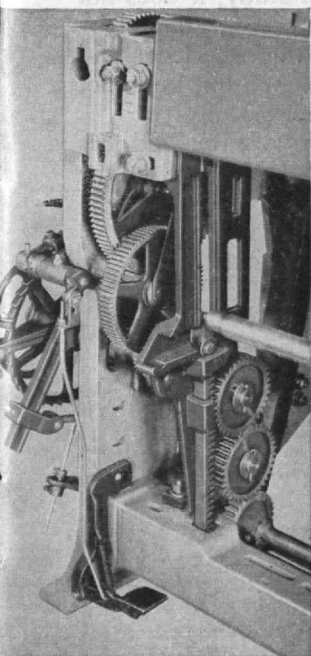
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## ENGINEERING EDUCATION

(Continued from page 114)

properties of matter and the operation of the fundamental laws of nature. He has a capacity to think in concrete terms; he resorts instinctively to numerical estimates, and he accepts the role of the empirical in the making of judgments. His reasoning is governed by concepts relating to the strength of materials, of factors of safety, of weight and form, of friction and efficiency, of the manifold limitations of pressure, temperature and volume, of components and systems.

In greater or lesser measure, all engineers share these modes of thought and action — and so do the technicians. Only to the degree in which they have captured the professional spirit may we distinguish between them. It is a subtle, intangible quality not to be reduced to definition — an ideal toward which we aspire. The common denominator of all conceptions of professional status, whether of medicine, law, or engineering, is a high sense of personal responsibility to client and to society, with a readiness to minister to the public welfare. A profession is, of course, based in some special field of learning, to be dealt with at a high intellectual level and involving intricate techniques. We take for granted the mastery by a professional man of the principles that underlie his special field, and their application to the useful aims of mankind. But we do ask in addition that he shall be actuated primarily by motives other than profit, which is the driving force appropriate to trade and commerce. Over and above the resources of his intellect and experience he must, as Judge Wyzanski remarked in a recent address, be imbued with a desire to contribute to the common account.

This year (June, 1955) some 26,000 young men who in due time may enter employment as engineers will be graduated from our schools and colleges. Of these a smaller number, we may be sure, will ultimately attain the ranks of a profession. The degree conferred by a college upon a young graduate marks the faithful completion of a course of study; it does not in itself create an engineer. The license granted by a board of examiners establishes the experience and technical proficiency of the candidate, but he is not thereby invested with professional stature.

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(Concluded on page 118)

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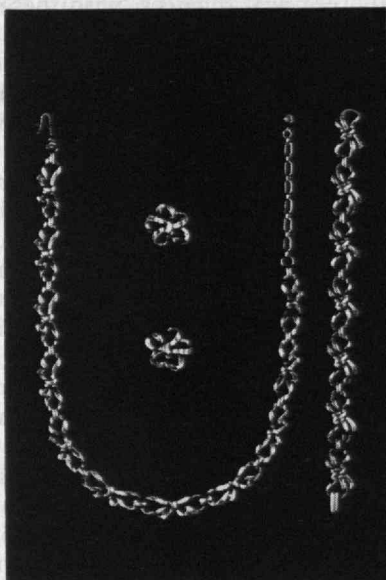
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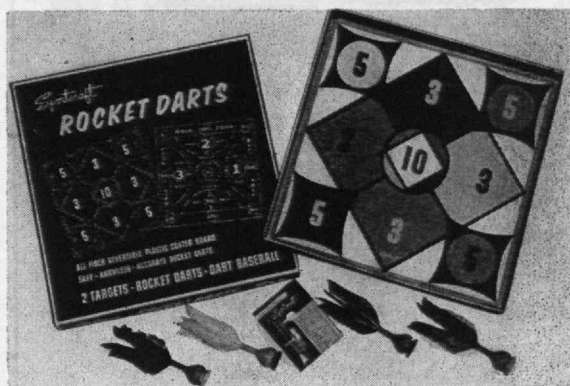
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## ENGINEERING EDUCATION

(Concluded from page 116)

most complex society of all times and the demands that it makes upon men are infinitely diverse. There is no one plan of education best suited to all needs, and the strength of our American system of education lies in the rich variety of its forms. There is an insatiable need by industry for engineers with sound practical training, and there should be schools in adequate number to supply them. But there is a need, too, for young men prepared to rise to the most elevated ranks of their profession. Now it is my conviction that one and the same plan of engineering education cannot serve both the aims of immediate utility and the highest aspirations of the profession.

Engineering education is built upon mathematics and the physical sciences; with these must be fused the humanities as integral elements rather than peripheral — as the means to deepen the insight of the engineering student into the culture and problems of his society, and to create an awareness of his responsibilities and an understanding of the ethical principles upon which his decisions must rest. In this sense all subjects are professional, whether English or political economy, circuit analysis or fluid mechanics, for all contribute to the making of a professional man. In the hands of wise and gifted teachers, all these are liberal subjects, for each in its own way may open and free the mind.

If there is one thought that the writer would like to urge, it is that we who are of the colleges and universities of the country lift our eyes to the challenge of undergraduate professional education. It is an education designed for both competence and conscience. It is distinguished less by content than by an attitude — a concern for principles, a ceaseless reaching down for fundamentals, for the essence of the matter. Unremittingly it cultivates a taste for excellence, for the first-rate, and the capacity to discern it. And with all this there must be an unflagging attention to the development of a sense of responsibility and dedication.

In the motto of New York University you will find the Latin word *Praestare* which means to stand among the first — to excel, to be first-rate. Apply it to things of the spirit, to all that pertains to the making of character — as well as to things of the mind — and it sums up perhaps better than any other single word the true aims of professional education.

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## SMALLPOX

(Continued from page 98)

Arnold gravely wounded, and the Americans evacuated Canada.

Inoculation continued to be employed as a fairly effective preventive of smallpox until the turn of the Eighteenth Century, when it was superseded by a newer and better method. In England a country doctor named Edward Jenner had observed that dairy maids who contracted cowpox from cattle were immune to human smallpox. In 1796 he deliberately vaccinated a young boy, James Phipps, with cowpox from the infected hand of a dairy maid. A few weeks later the boy was inoculated with true smallpox material, but did not get the disease. After further tests, Jenner wrote a paper on this subject in 1798, a little pamphlet which aroused much interest on both sides of the Atlantic. From 1799—1801 more than 3,000 persons were successfully vaccinated in London.

The first proponent of this new method in America was Dr. Benjamin Waterhouse, Professor of Physick at Harvard, who published an article on the subject in the *Columbian Centinel* in Boston on March 16, 1799. On July 8, 1800, Dr. Waterhouse performed the first vaccinations in this country, using seven members of his own household as the subjects. None of these contracted smallpox when later exposed to it. Dr. Waterhouse sent some of his vaccine to President Thomas Jefferson, whose physician inoculated the members of the President's family at Monticello. The doctor, strongly supported by Dr. James Jackson, also managed to wheedle from the Boston Board of Health a public endorsement of the process. This board, one of the first in the United States, had been organized in 1799 with Paul Revere as president.

Although here at last was a practical and proven method for the conquest of a terrible disease, tremendous opposition to vaccination immediately arose among the ignorant, the prejudiced, and the deluded. Cotton Mather had died in 1728 and was no longer available to conduct a crusade among the clergy, many of whom were against vaccination. Despite much ill-considered opposition, Massachusetts adopted a vaccination law in 1809, and gradually most of the states followed this example, making vaccination a prerequisite for attendance at school, or requiring it in the general population when small-

(Continued on page 120)

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Room 1-280, M.I.T.  
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## SMALLPOX

(Continued from page 119)

pox was present or threatening. The disease continued, however, to be a serious menace in this country until well into the Twentieth Century. In 1840, for example, smallpox was responsible for 20 per cent of all deaths of children under 10 years of age. As late as 1933, there were about 13,000 cases in the U.S., mostly in states without compulsory laws.

In 1902 smallpox was, as usual, prevalent in Cambridge, Mass. Acting pursuant to state law, the city board of health passed a resolution requiring vaccination of all persons who had not been successfully vaccinated since 1897. A citizen by the name of Henning Jacobson refused to comply, was haled into court and fined, an action upheld on appeal by the Supreme Judicial Court of Massachusetts. The case was then appealed on constitutional grounds to the Supreme Court of the United States. In a noteworthy decision handed down in 1905 by Mr. Justice Harlan, this court sustained in every particular the legal principle of compulsory vaccination. By an interesting coincidence, the son of this Henning Jacobson is now an esteemed neighbor of the author in Newtown, Conn.

In the course of a lifetime career in public health, I have had to mingle with many cases of dangerous diseases, but the last time I saw a case of smallpox in this country was in 1918. As sanitary inspector for the military forces in the extra-cantonment area of

(Concluded on page 122)

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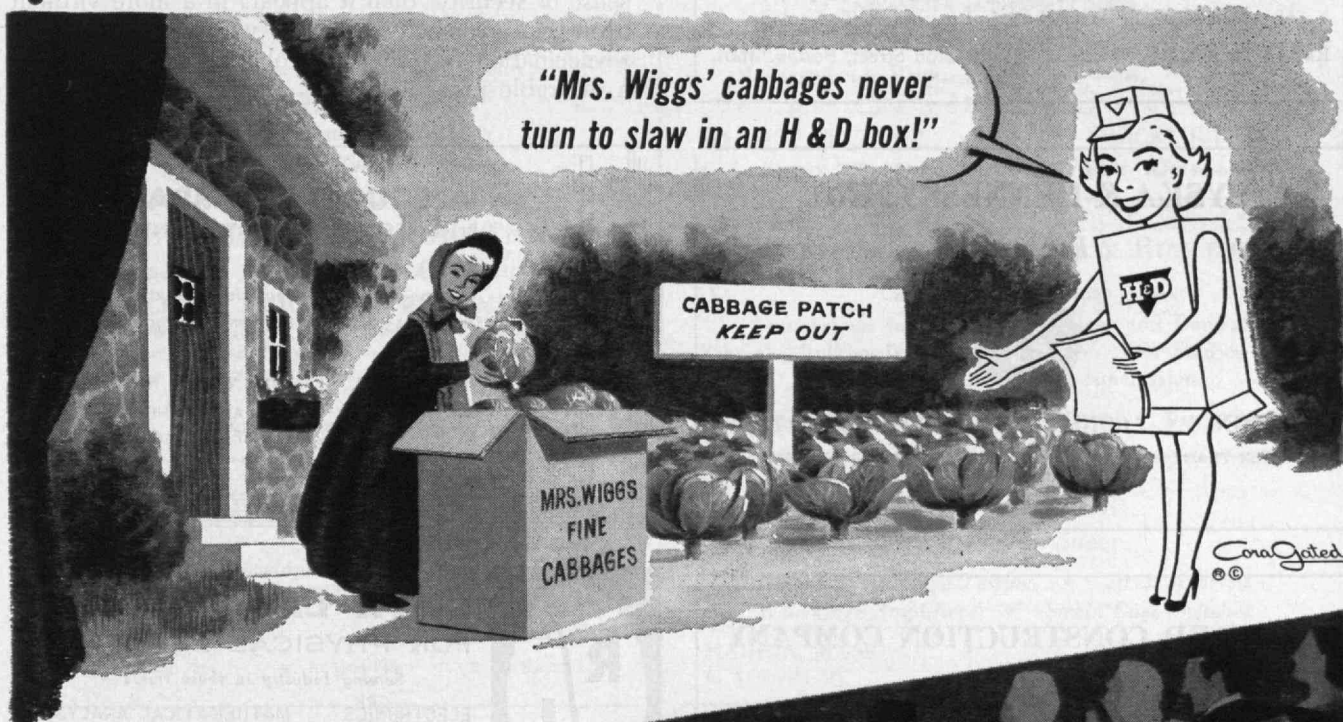
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## SMALLPOX

(Concluded from page 120)

Camp Sherman at Chillicothe, Ohio, I accompanied the city health officer to a small brick house in the slums. In the fetid living room a woman lay on a couch, covered by a piece of old carpeting, while on a cot was a child under a piece of dirty burlap. When pulled back, these covers revealed two full-blown cases of malignant smallpox. Since this is the most contagious of all diseases, I immediately went out and had myself vaccinated, knowing that successful vaccination within five days of exposure is an absolute preventive. I did not get the disease. In all, I have been vaccinated some 10 times, without any ill effects, and with a wholesome sense of security, especially when traveling in foreign countries where this disease is still widely prevalent. American tourists returning from certain foreign lands, Mexico for instance, must show a recent vaccination certificate in order to be readmitted.

Smallpox may be almost a forgotten disease in this country, but lack of familiarity with it should not breed contempt. A few years ago there was a smallpox scare in New York City, when several cases were introduced from Mexico, but the potential epidemic was nipped in the bud by a widespread vaccination campaign. About 25 years ago there was a severe epidemic of black (hemorrhagic) smallpox in Detroit. History sometimes repeats itself with maladies which are thought to have been conquered. A virus may lie dormant while the populace is lulled into a false sense of security, then it appears in a more virulent form than ever before. That is why vaccination and revaccination is still, and probably always will be, a desirable procedure.

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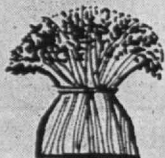
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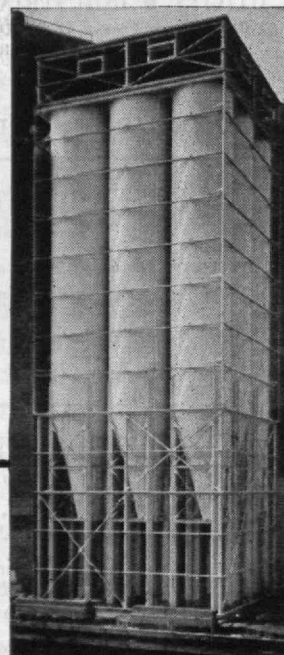
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The M.I.T. CLUB OF NEW YORK with its regionally affiliated organizations, the M.I.T. ALUMNI OF LONG ISLAND and the M.I.T. ALUMNI OF WESTCHESTER, schedules one or more meetings each month. Attendance at

Club affairs this past year ranged from 150 to 545 Alumni turnout this last for a dinner meeting on Automation featuring Drs. Norbert Wiener and Gordon Brown as speakers.

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# Alumni AND Officers IN THE News

## In The News

WILLIAM W. VICINUS, JR.'23 has been elected Vice-president and director of the Wall Street Management Corporation.

GORDON BUNSHAFT'33 has been cited as one of four architects "who are helping to change the look of America" by Vogue Magazine in a recent article. Mr. Bunshaft is associated with Skidmore, Owings and Merrill, and is the partner in charge of design.

NORMAN BROWN'42 has been awarded the University of Pennsylvania's Engineering Teaching Award for 1955. Criteria for the award are student-teacher relationships, classroom presentation and work in a specialty other than teaching. Nominees must be below the rank of associate professor — to which Dr. Brown was promoted after his selection.

DOUGLAS S. SMITH'52 is now the director of research and development for the J. B. Williams Company. Dr. Smith received his Ph.D. from the Institute in Course V.

## Rising In The Ranks

VICE ADMIRAL ALFRED M. PRIDE'26 has recently been named commander of the Navy's Pacific air force.

CAPT. ROBERT S. DAY'48 has been promoted to the position of registrar at the U. S. Military Academy at West Point, New York.

## By-Liners

THOMAS C. DESMOND'09, New York State Senator, is the author of an article entitled "Grandparents Adopted," which appeared in a recent issue of the *Christian Science Monitor*.

A series of articles based on a book by DAVID O. WOODBURY'21, and entitled "Atoms for Peace," is currently appearing in the *Free Press* at Burlington, Vt.

## Gold Medalists

MAURICE HOLLAND'16 was presented recently with a special founder's Award by the Industrial Research Institute for his services in originating the Institute and for his many contributions to it during the years. His award was presented "in recognition of his vision, persistence, energy, and skill in laying the foundation on which the Industrial Research Institute has been built, thereby advancing the cause of industrial research and contributing to the welfare of the nation."

ROBERT V. WOODWARD'36, professor of organic chemistry at Harvard University, has been awarded the 1956 William H. Nichols medal of the American Chemical Society's New York Section. Professor Woodward has had a leading part in the synthesis of quinine, cortisone and lysergic acid — a drug used in studying mental disease. This medal is Dr. Woodward's third high honor this year. He received the \$1,000 Baekland Award of the ACS's North Jersey Section in recognition of his many outstanding contributions to organic chemistry. Last May he became the first recipient of the George Ledlie Prize, a biennial award given to the most valuable contribution to science to the benefit of mankind. In addition to his achievements in the synthesis of complex natural compounds, Dr. Woodward has contributed to a knowledge of the chemical architecture of a number of natural and man-made substances.

CLAUDE E. SHANNON'40 is this year's recipient of the Stuart Ballantine medal, awarded for outstanding achievement in the field of communications. Among Dr. Shannon's early contributions to the field of communications was the development of a mathematical theory of switching circuits. This led to a so-called "switching algebra" which is in widespread use today in the design and analysis of computers, telephone offices, and other large automatic devices. Dr. Shannon's other contributions have dealt with the fundamental theory of transmission. Dr. Shannon has received many other honors, among them the Alfred Noble Prize in 1940.

## Honorary Degrees

ALFRED P. SLOAN, JR.'95, chairman of the board, General Motors, was one of seven prominent Americans awarded an honorary degree recently at Syracuse University. His citation read, "You were one of the founders of the Council for Financial Aid to Education, the organization of which marks a turning point in the financial support of privately endowed colleges and universities. As effective in philanthropy as in the conduct of industry, you have the most solid of satisfactions, the memory of great accomplishments and the prospect of more to come."

The Polytechnic Institute of Brooklyn has awarded an honorary Doctor of Chemistry degree to EGER V. MURPHEE'23, president of Standard Oil Development Company.

FREDERICK E. TERMAN'24, has been awarded an honorary Doctor of Science degree at Syracuse University. Dr. Terman is Provost and Dean of the School of Engineering at Stanford University.

## Appointments

EDWARD H. WELLS'27 has been appointed Merchandise Manager of the newly created Johns-Manville Packings and Friction Materials Division. Mr. Wells has also been elected Vice-President of Johns-Manville Sales Corporation.

WILMER L. BARROW'33 has been appointed to the new position of Vice-President for research and development at the Sperry Gyroscope Company.

JOSEPH F. COFFEY'39 has joined American Viscose Corporation's Research and Development Division as leader of the newly created Commercial Development Section.

EDWARD W. FORTH'47 is now Vice-President in charge of manufacturing for DeWalt, Inc., a subsidiary of the American Machine and Foundry Company.

W. A. LOCKWOOD'48 has been selected to fill the position of Senior Economics Analyst at the International Petroleum Company, Limited, in Coral Gables, Fla.

HOWARD S. JARRETT'51 has been named as a research supervisor for the E. I. duPont de Nemours and Company at Wilmington, Delaware. Dr. Jarrett obtained his Ph.D. from M.I.T.

## Obituary

JOSEPH H. SEARS'98, May 11.  
BRAINERD TAYLOR'99, Aug. 21.\*  
MILTON C. DUNHAM'02, July 15.\*  
ROBERT A. COOK'03, Jan. 26.  
JULIUS L. HECHT'04, June 9.  
WILLIAM A. KEMPER'04, Nov. 30.\*  
C. WALDO ADAMS'05, May.\*  
CHARLES A. EMERSON'05, Aug. 24.\*  
A. P. GERRY'05, Oct. 15.\*  
J. M. GLADDING'05, Jan. 31.\*  
CELIA LEMNER'05, Mar. 29.\*  
RAY H. WHITE'05, June 15.\*  
EDWARD F. KELLY'07, Sept. 26.\*  
ALBERT EMERY'08, July 2.\*  
RISDALE ELLIS'09, Date Unknown.\*  
A. O. WILSON'11, Sept. 19.\*  
LEO B. MILLER'15, May 21.\*  
C. WESSON HAWES'17, Sept. 22.\*  
EDWIN J. CAMERON'18, Mar. 22.  
PHILIP BROWN'19, June 17.\*  
ROGER H. CLAPP'21, Aug. 25.\*  
AZEL AMES'24, Sept.\*  
JOHN C. POPE'24, Aug.\*  
GEORGE P. DAVIS'24, Aug. 25.\*  
NORMAN HILL'26, Aug. 12.\*  
JOHN J. SULLIVAN'31, Aug. 26.\*  
GEORGE W. DENISON'33, Sept. 27.  
SYDNEY NASHNER'34, Aug.\*  
JOHN B. MERRILL'36, Oct. 6.  
CLYDE F. HAYWARD'42, Sept. 10.\*  
C. S. ABRAHAMSON'50, Aug. 16.\*

\* Further information in Class Notes.

# News FROM THE Clubs AND Classes

## CLUB NOTES

### Cleveland

It appears as though the Cleveland M.I.T. club is due for an extremely active 1955-56 season. At this writing, two meetings have been planned. The first, and the opening meeting of the season, is a Ladies Night affair at the University Club, with Miss Bell Greve as principal speaker. Miss Greve is an outstanding personality in the field of public welfare activities, and is director of the welfare department of the City of Cleveland.

Although the Ladies Night meeting customarily has come later in the season, the first meeting in 1954-55 was scheduled as Ladies Night, and the response was so enthusiastic that it was decided to continue the practice this year. We look for an excellent kick-off to a busy season.

The second meeting will be the annual Christmas luncheon on December 28, also at the University Club. As is our custom, M.I.T. students from the Cleveland area who are home on vacation will be our guests, and will bring us up to date on affairs and activities at M.I.T. We expect that this luncheon will be as successful as similar meetings in the past, and hope that all M.I.T. alumni in Cleveland will be with us.

At an executive committee meeting at which plans for the season were made, it was also decided to explore the feasibility of publishing a directory of M.I.T. alumni in Cleveland to be published during the current year. It is expected that work on such a directory will commence promptly and that it will be available in the near future. It was also decided to adjust the dues for recent graduates, in order to encourage a larger membership among the younger men. Tentative plans were also discussed for several interesting meetings after the first of the year, of which announcement will be made at a later time. — HERBERT J. HANSELL, *Secretary*, 1759 Union Commerce Bldg., Cleveland 14, Ohio.

### Cuba

The M.I.T. Club of Cuba held its regular annual meeting for election of officers on October 4th, during a dinner gathering at Centro Vasco in Havana. — Vice-President Antonio Badia'43 presided and reported about most of the members who were unable to attend, including President Beola'14, who is making a journey thru Europe. — Very favorable comments were expressed by all those present about the luncheon gathering held last December at Beola's farm near Habana, in a picnic informal fashion

where wives attended; there was the unanimous agreement that such an event had been a very successful one and should be repeated.

Badia also reported about outstanding accomplishments by several members of the Club, mentioning increases in families and business promotions. — He called on Antonio Helier Rodríguez'21 to inform on his visit to the M.I.T. Club of Mexico, last March, and about the first Alumni Officers Conference held at the Institute last September. — Rodríguez reported his wonderful impressions at both reunions, emphasizing on the interest for improving to the utmost the selection of candidates to enter the Institute and requesting from all members their cooperation in encouraging good students to aim at M.I.T.

The following officers were elected to run the Club for one year: President, Antonio Badia'43; Vice-President, Gonzalo Docal'44; Secretary, Salomon Heisler'48; Assistant Secretary, Rafael Laredo'44; Treasurer, Juan Chibas'31; Assistant Treasurer, Justo L. Michelena'25; Review Secretary Antonio Helier Rodríguez'21, all of whom were present and took charge of their respective duties. The other members present were: Lorenzo Lamadrid'44; Alfredo Blanco'41; Agustín Reyes'48; Miguel Amézaga'24; José Luis Marqués'49; Daniel Kokiel'53; Victor Carmona'43; Hari Cruz Bustillo'32; Federico Lindner'48; Francisco Vázquez'44; Pedro Mari'37; Alfredo Pedraza'41; Luis Larragoiti; Gaspar Vizoso'31; Gustavo Calleja'43; Arturo Martín de Nicolás'50; Thomas Rosenberg'51; Juan Piñol'55; Juan Navia'50; Alberto Villamil'42; José A. Villamil'38; Angel Figueredo'45; Fernando Blanc; Ignacio Mora'47; René Lamadrid'50; Narciso Padilla; Luis Suárez'48; Rafael Sánchez Casanova'33; Angel Clarens'39; Julio Ulloa'33. — ANTONIO H. RODRIGUEZ, *Secretary*, Concordia 61, Havana, Cuba.

### New York

The long-awaited moment arrived on Wednesday, September 28th when the lease with The Chatham was signed for Club quarters in the hotel. The announcement was made that evening to Club members at the traditional Beer Party.

As a measure of the response which the idea has won from the membership, over \$12,000 has been contributed during the Club Quarters Fund Solicitation Campaign. This amount was donated by over 200 members. As a result, the Club can go ahead with its policy of offering the maximum inducements to members at the ten dollar per year dues level. The purpose is to obtain as many members as possible by meeting the demands of alumni.

As a reflection of this policy, the M.I.T. Club of New York now has more

members than ever before. The list continues to grow day-by-day. If you know some recalcitrant classmate who has not taken the important step, tell him what he is missing. If he isn't the speculative type who will invest ten dollars sight unseen, bring him around. We will be glad to see him and we'll lavish some hospitality on him.

The Club will be open for use by Club members by the time these notes are read.

Right now, we should pause a moment and express appreciation to Dave Broudy '22 for his diligent efforts in obtaining the most favorable contract with the hotel, and to Harry White'99 for arranging the decor. Men like these make the Club what it is.

The most important event of the year is now scheduled in the Club's program for January 4, 1956. It will be the Victory Dinner held at the Waldorf-Astoria. You will be receiving the details thru the mail and this notice may serve as a reminder for you to make your reservations.

Professor Walter G. Whitman, head of the Department of Chemical Engineering at the Institute, has agreed to be the speaker on February 2nd at the Mid-Winter Regional Meeting. His name was most recently in the news as Secretary-General of the Geneva Conference on the Peaceful Uses of Atomic Energy. No doubt, his message will be concerned with the results of the epochal meeting.

With the expectation of seeing you at the new Club Quarters, we are — M. R. McGuire, *Secretary*, The Cooper-Bessemer Corporation, 25 West 43rd Street, New York 36, New York, J. C. Plantinga, *Assistant Secretary*, Myer, Strong & Jones, 101 Park Avenue, New York 17, New York.

### Rochester

The annual steak roast was held at Mendon Ponds Park on Saturday, September 17th. The weather was perfect and we had some fifty members present. The customary baseball game between the "Odd" and "Even" classes was held with the "Odd" classes winning out by virtue of greater youth. Election of officers for the year 1955-56 was held at that time. Newly elected officers were: President, R. M. Wilson'30; President elect, V. N. Hansford'37; Vice-President, F. J. Kolb'38; Treasurer, W. N. Hosley'48; Secretary, J. K. Littwitz'42; Assistant Secretary, A. Mackintosh'44. Mike Doyle'50 was also elected to a three-year term on the Executive Committee.

The first meeting of the season was held November 16. This meeting was held jointly with the Rochester Association of the United Nations and the Rochester Section of the American Institute of Chemical Engineers. Prof. Walter Whitman was the featured speaker.



A meeting of the Educational Councilors was held at the home of R. M. Wilson '30 to discuss activities for the coming year and to organize the school visit schedule for Prof. Albert G. Hill who was in Rochester for four days in November. Dr. Hill visited fourteen secondary schools in the area during his visit here. — J. K. LITTWITZ, *Secretary*, 191 Rogers Parkway, Rochester, N.Y.

## Washington

The new officers for 1955-56 season are William R. Ahrendt '41, President, Charles H. McDonnell '48, Vice president, Sterling H. Ivison '41, Secretary, Andrew F. Hillhouse '43, Review Secretary and Michael K. Johns '53, Treasurer. Additional members of the Executive Committee are Nicholas P. Stathis '29, Ernest Reisner '30, and Chester N. Hasert '41.

We started the season with a very successful stag smoker on October 11, at the Potomac Boat Club featuring a buffet supper and choice of liquid refreshment. To accompany post-supper singing we were fortunate to have Devron and his accordion. He is a well-known and talented musician with a penchant for singing "songs my mother never taught me." As an added attraction we projected the new color movie, "People, Products, and Progress — 1975" just released by the U.S. Chamber of Commerce to show what engineers and scientists have in store for the future of America. About 70 alumni attended this smoker. One member remarked this was the most enjoyable smoker he had ever attended.

The dinner meetings this year will continue to be held at the Cosmos Club with the first meeting scheduled for Tuesday, November 29, featuring an outstanding speaker to be announced later. — STERLING H. IVISON, JR., *Secretary*, 1703 37th St. N.W., Washington, D.C.

## Western Pennsylvania

The first meeting of the season was held on September 20, with our able president, Al Oxenham '45, presiding. After the usual stein session and dinner, the program chairman, Bill Humphreys 2-46, introduced the guest speaker who was the person in charge of the City-County Crime Laboratory. Needless to say the enthusiasm for certain extra-curricular activities of some alumni suffered, but the analytical and absorbing talk was enjoyed by all. Attending alumni included F. P. Baggerman '37; W. U. C. Baton '04; E. L. Chappell '24; K. W. Comsey '39; J. R. Ferguson, Jr. '37; D. S. Fraser '28; Julian Gammon '45; Gerome Gordon '46; E. R. Haigh '22; Wes Hemeon '26; H. C. Johnson '46; K. J. Johnsen '41; E. H. Koontz '36; W. M. Laird '43; I. E. Madsen '33; C. F. Peck, Jr. '41; H. F. Raab, Jr. '50; T. I. Stephenson '45; B. W. Steverman '31; J. L. Taylor, Jr. '02; R. C. Wellwood '33; R. L. Whitney '50; H. C. Zambell '37. Why not join our regular monthly dinner meetings if you live in the Pittsburgh area? — ANDREW A. MAROCCHI, *Secretary*, 445 Serpentine Drive, Pittsburgh 16, Pennsylvania.

# CLASS NOTES

## • 1890 •

Following are a few notes from our 65th anniversary omitted from last month's Review. Will Curtis stole the show with a full page article on his selection as the "Cape Cod Doctor for 1955." His picture appeared with a typical old style horse and buggy amid a surrounding crowd. We missed him at our celebration. Francis P. Sears wrote that the reason why he took a preliminary year at Tech was that his parents thought he was too young to go to Harvard. He says he "really did not take a technological course except in higher mathematics," and though he did well in the mid-years examinations, he did not take the finals because he went to Europe. He adds: "I found my six months abroad more interesting and of benefit to me in my subsequent life than my time at Tech, and I do not feel sure that my years at Harvard College were especially helpful. I also went through the Harvard Law School and I believe the training there was very helpful." At this writing the location of the (Hayden) Bennett medal is still under discussion. Who is the artist in our Class competent to discuss its location? The Woman's Alumnae has it in hand, with Dr. Anderson's supervision. — GEORGE A. PACKARD, *Secretary*, 25 Avon St., Wakefield, Mass.; CHARLES W. SHERMAN, *Assistant Secretary*, 16 Myrtle St., Belmont, Mass.

## • 1891 •

An attractive young man called at my home recently in relation to the Red Feather Campaign. I found he was giving freely of his time and talent to this excellent cause. I was also pleased to discover that he was a grandson of our former class president, Harry B. Bradlee. His name is Bradlee Perry, and he is the son of a friend and neighbor of mine, Roger Perry. I asked Bradlee to give me a little data about his grandmother, and he kindly wrote me as follows: "You will be interested to know, I am sure, that my grandmother is in perfect health and just as active as ever. Family and some church work occupy her time through most of the year. With six grandchildren and two great grandchildren she is kept busy keeping track of the younger generations. Every summer she spends a few weeks in Vermont and a short time at Cohasset with my uncle and his family."

Robert Ball wrote from England last summer: "Many thanks for your letter and the report of the class reunion. What an interesting occasion it was and you must have been gratified at the muster which I suppose was a fair proportion of the survivors resident in the Eastern States. Alas, I missed the past this time in sending a greeting. Harry Young sent me a notice which should have elicited a reply. "Memory is a conspicuous failing with 85 years from which friends far and wide suffer gra-

ciously without complaint. Your paper on Professor Runckle would interest me. I wonder if you know Mr. W. R. Hawthorne who was professor of Mechanical Engineering at M.I.T. and is now professor of Applied Thermodynamics here at Cambridge University. He married (in 1939) Miss Barbara Runckle, and I am wondering if she was related to our professor who taught us mathematics and whose book (though somewhat out of date) on Analytic Geometry is on my shelves. I am interested in the New England of 'Mayflower' days, and among the representative relics of that period would be the taverns modeled on the lines of those in the old country. Though the builders were Puritans it is unlikely that their buildings were greatly different from some of those still to be seen here and bearing quaint names such as, "The Blue Dragon," "The Split Eagle," etc. Even today they mark the bus stages just as they used to do when King James was alive! We have been undergoing a succession of strikes which has upset the even tenor of our way. The reasons for thus plunging the country into disorder are frivolous since arbitration is open to settle any imagined grievance, and eventually, after much disorder, it comes to that. I shall think of you at that delightful Lake Sunapee. Charlie Aiken had a house there, and experiments were made with a line-throwing gun to the destruction of a neighbor's chimney stack! We did our thesis in testing the locomotives which then ascended Mt. Washington."

From Bowdoin College came this letter early in October written by Philip S. Wilder: "My father, S. W. Wilder, and my mother will be observing their sixtieth wedding anniversary next Monday, October 17. As I am sure you know, Father is confined to his apartment at 21 Herrick Road, Newton Centre, and there will be little active celebration. I know, however, that cards from friends would be greatly appreciated."

*Personal.* Your secretary had a narrow escape from a serious accident when he drove his car against a large tree. The damage to him was small (except to his feelings), and the car was soon repaired. His doctor has told him not to drive any more. — GORHAM DANA, *Secretary*, 44 Edge Hill Road, Brookline, Massachusetts.

## • 1896 •

As of this writing, Oct. 12th, we have much to be thankful for. Our distinguished president is happily recovering from a serious heart attack (coronary thrombosis) and all our prayers go out in wishing him an un-interrupted recovery. Regardless of our individual political faiths, the whole world has indicated through its thousands of messages what a truly great man Mr. Eisenhower is. May we express as representing our class a solid block of approval toward this end. We wish to welcome all of you following a successful vacation period and trust we may enter the coming season with courage and the benefits accruing from the various services which our individual efforts have added to the world's progress. Lacking material for our class notes and fully appreciating the fact that all of us

have attained some degree of accomplishment, some of the alumni have suggested that the inscription on the plaque of the "Rockwell Cage" should be of interest to my classmates. So I quote with humility the following. "Named in Honor of John Arnold Rockwell '96, M.D." "Member of the Alumni Advisory Council on Athletics from its organizational meeting on Jan. 18, 1898 until it was succeeded by the athletic board on June 5th, 1947. Chairman of the advisory council from 1914 to 1947. For nearly fifty years undergraduate life at the Massachusetts Institute of Technology was enriched by his faithful and effective service to athletics."

In general we can report no casualties. Some of us are acting our age to better advantage than others. My personal record rates no honors but I trust to make a better report in the near future. My side kick Fred Damon is able to come and go quite freely.

Recent word from Bakenhus reports his having passed a searching physical examination with a 100 percent average. This is in keeping with his various activities and the result of his excellent rules of daily perscribed exercises and general habits. He continues his musical "hobby" at a high level having given up his fencing competition. His engineering has gradually resolved itself to being honored as Secretary Emeritus of the American Institute of Consulting Engineers. Your secretaries will appreciate similar reports of current standings from other classmates thus making our notes more complete. — JOHN A. ROCKWELL, Secretary, 24 Garden St., Cambridge 38, Mass. FREDERICK W. DAMON, Assistant Secretary, 24 Garden St., Cambridge 38, Mass.

## • 1897 •

A telephone conversation with Walter Humphreys revealed that after departing for his summer home he was obliged to return to Boston because of ill health. He spent several months at the Hahnemann Hospital with virus pneumonia amongst other ailments. A Trustee of the hospital he enjoyed excellent care and service and, fortunately, is out again and resuming his normal activities. Early in October he attended a meeting of the corporation which was unusually well attended, there being over 50 members present out of 63 active members.

An interesting letter from Charlie Breed, Camden, Maine, follows: "Midnight Sunday full moon across the ocean. Regarding life story for '97 men, I'll send story of Dick Whitney so that it will reach you this week. My personal story will have to come later. The Whitney story will go to my old secretary at Tech, and he will send it directly to you and you edit it all you wish. It will reach you within a day or two of this letter. And before the next 'deadline' you will get my personal letter."

"Was in Boston when your letter reached Camden. Dr. Paul White saw me the day he came from the President. He gave me a good report as did Dr. Siscoe, my Boston diagnostician. I recently lost ten pounds. They tell me I eat too little. That might be so. I'll try to behave."

"In March and April Elsa and I hope

to be at Braeburn and to attend the Symphony regularly for those two months. We hope to see you there."

Not long ago Agnes Bradley called on me, and she seemed to be in good health. I wish you could have been here, then it would have made her visit of deeper significance. You and I have a wife still with us. Most persons at our age are alone.

"In this house where I live, at my feet, in fact, is a music recorder in the Captain's Chest. As I write, Rubenstein is playing softly to me. So I bid thee good night."

Charlie Breed's article referred to above follows: "Richard Whitney died September 3, 1954 at the age of 79. He never married. Few of our classmates knew him for Dick was allowed to resign from Tech at the end of his first year. He had an able mind but did not use it much in and about Rogers. At the noon hour Dick walked over to Commonwealth Avenue and had lunch with one of his aunts. He never attended a class reunion, so '97 knew little of him. By nature he was retiring. He and his other two brothers were closely guided by their mother. His father was an investment broker on State Street. Their home was a typical mansard-roofed residence in Dorchester, where Dick was born and where he died."

"Dick's grandmother owned a home at the corner of Washington Street and Bedford Street, Boston. R. H. White Co., the large department store, leased this land for many years. It is the corner where the clock stands. R. H. White often has the slogan in its ads which reads 'Meet me under the clock.' This small corner lot was so important to the White Co. that they paid a large rent to the Whitney Trust, which had been formed by Dick's grandfather. It was income from this Trust that largely supported the Whitney family and from which Dick expected to receive a neat yearly income for life. This was the underlying reason why he left Tech at the end of his freshman year."

"Dick was a pigeon fancier from boyhood. At the age of 20 he began to raise fancy pigeons. When he died he left in my hands, as executor of his estate, 600 of the 'pedagrees' pigeons in existence. His fame with pigeons was worldwide. He traded them in England, Sweden, Austria, India — every part of the globe knew of Dick Whitney's fancy pigeons. For 60 years Dick lived with his birds. Of course, he became a judge of many pigeon shows, won numerous prizes, and was president of national pigeon associations and of the Boston Poultry Exposition, which gives annually a well-known Poultry and Pigeon show at Mechanics Hall, Boston."

"Some of his pigeons I sold for \$200 a pair; a paired bird carries much greater value than a single bird. The beauty of plumage of some of his white, brown and black pigeons was superb."

"Dick frequently went to Europe to find prospective mates for some of his prize-winning birds."

"But the annual number of dollars that he received from the trust remained the same year after year and the cost of pigeons and their feed increased. During his last year Dick was practically bedridden. Daily a basket or two of his birds

was brought to his bedside for his examination. I believe he lived happily with his life-long hobby. Many a time did I urge him to write a book on pigeons; certainly he was an authority." Another confirmation that this is indeed an age of specialists. We wonder how many members of the class recall Dick.

M.I.T. recently enjoyed its first visit from the Boston Symphony Orchestra which gave a brilliant program of French music at the Kresge Auditorium. It was also the first time that the Boston Symphony had appeared on television. Admission to the concert was by invitation so not having been invited we enjoyed it at home by television over our new educational Channel 2 (WGBH). Thank goodness no advertising.

Those of you who can get Channel 2 are doubtless enjoying many programs thereon. Both M.I.T. and the Boston Symphony are amongst the group of sponsors. — JOHN P. ILSLEY, Secretary Pro-tem, 26 Columbine Road, Milton 87, Massachusetts.

## • 1898 •

'98 responded well to the appeal of the Institute to contribute through the Alumni Fund to the Karl Taylor Compton Memorial Building. Thanks are due to Lester for two inimitable letters, to Dan for a pinch-hitting letter last June, to the '98 Capital Gift Fund for a running start, and to a wide and generous response from the Class. If you have read the report of the Chairman of the Alumni Fund Committee, Theodore T. Miller '22, you have noted that '98 was near the top in the percentage of the Class contributing, only being bettered by our friendly competitor, the Class of '97. Chairman Miller in a special paragraph of the report called attention to the Classes of '97 and '98 and graciously added, "At its 50th Reunion, 1898 established a Capital Gift Fund, income from which comes to the Alumni Fund annually. Many of the contributors to that Class Fund have passed on. If their names were to be added to the list of contributors, the total would exceed their active class roll." We will elaborate a bit from the Class Agent's records. Including the deceased members of '98, who contributed through the '98 Capital Gift Fund, there were 91 contributors from the Class of '98. Certain of these contributors also contributed more than once. Thus, 29 contributed twice; 4, three times; and one member of the Class contributed *four times!* All told, members of '98 made 126 separate and distinct contributions to the Alumni Fund participation in the Karl Taylor Compton Memorial Building.

There is another building at M.I.T. which has recently been much in the news — The Kresge Auditorium.

Writing about the physical properties of M.I.T. and especially to those classmates who have not been "back to M.I.T." since Boston Tech days, it is difficult to envisage the extent of the institution that is M.I.T. on the banks of the Charles. This was forcefully brought to my attention recently. With my sister I had come to M.I.T. for new passport pictures. The appointment was for 10:00 o'clock and we arrived at the new Rogers



entry at 9:40 A.M. "Twenty minutes," I thought, "during which I will have time to see Editor Dudley of The Technology Review." So leaving the sister ensconced in a comfortable seat beneath Dr. Compton's picture, I started for the office of The Technology Review, and walked and walked and walked. Presently, I realized that I did not have nearly enough time to make the proposed call and be on time for the taking of the pictures. So I turned back; the pictures were taken; and the other call made thereafter. Just imagine, by comparison, yourself sitting on old Rogers steps, in undergraduate days, with twenty minutes to make a call in Walker and return and how simple and easy it would have been!

Continuing the narration of Lester's trip to the West last summer, we will include the following tribute: — "Excerpt from address of Gill Robb Wilson accepting the presidency of the Air Force Association at San Francisco, July 24, 1955. There is one other very happy privilege that I have. Up through the years, from the time of Wilbur and Orville, one man more than any other man in America in the broad field of aeronautic development has typified the dreams and the hopes and through his course of life has made so many contributions that they could not be enumerated. Among the outstanding achievements was the founding of the Institute of Aeronautic Sciences. This man has been operated on for cancer in the last few years and has survived. He has an indomitable spirit and a heart that the Almighty Himself must have put special attention into creating. I would like him to stand up so that you may see him. In the hearts of many of us, the dean of all the people who have had the dream of the sky — Lester Gardner."

Bill Brewster writes, "Moved to the above address, 308 Church Street, Lewisburg, West Virginia, some months ago. Please change address on M.I.T. records accordingly. Greetings to you and all of '98. Now have 12 grandchildren and 2 great-grandchildren, scattered from Ohio, Florida, Mississippi and Texas."

We refer to a recent presidential letter and in particular to the discussion concerning the diversification of the '98 Class Notes. One suggestion was to the effect that in addition to interesting bits from your own activities and reflections, items concerning the children, the grandchildren, the great-grandchildren and the in-laws would be helpful. You will recall that Arthur Blanchard and Ray Faught have recently sent in items concerning their sons. Bill Brewster, as above, furnishes information concerning his grandchildren and great-grandchildren. To keep the ball a-rolling, the Secretary will quote from a letter from his daughter, Mrs. Holden Furber. She and her husband are not unknown to the Class. They were present at certain features of our 50th. Among pleasurable experiences, the daughter has mentioned the day at the Country Club and especially a game of croquet with Mrs. Tietig. The Furbers, this summer, were in Europe, and attended the International Congress of Historical Sciences in Rome, September 4-11. We quote in part from a letter, describing one feature of the Congress.

"We left the hotel at 5:00 for St. Peters and the Papal Audience. When we got to the Square it was full of people, who had heard that the Pope was coming back from Castel Gondolfo. We entered by the long staircase on the right of the Basilica, and after a long climb, looked over by hordes of Swiss guards and papal ushers in scarlet brocade, we eventually reached the huge throne room, directly over the portico of St. Peter's, with five great windows overlooking the Square and the papal throne in the far end. We secured seats so that we could look out over the Square. About 5:45, the crowd began to move, then to kneel and cheer and we knew the Holy Father must have arrived. A bit before 6 the cardinals came in in their scarlet robes, followed by a lot of other church dignitaries — 7 cardinals in all. Then the Pope was borne in on the sedia gestatoria. Everyone in the packed hall applauded, and the Catholics crossed themselves and clapped as he went down the hall giving the papal blessing. He looked well recovered from his long illness and when he started reading his long discourse to us from the throne his voice was remarkably firm and strong. He spoke in French. (The text in French was printed in the O.R. next day, a most interesting discourse on the Catholic Church as a *fait historique*, going back to St. Augustine, Boniface VIII, etc.) After that the Pope got onto the sedia and was carried out, while he bestowed his blessing right and left on the objects of worship we all had brought, and on us. A door was open on the left showing a beautiful altar all illuminated, but so many people were going in and out through the fairly narrow door, I thought we had better not try to go in. (It was the Pope's private chapel, I found out later.) But I saw another open doorway and told Holden (Prof. Furber who, by the way, had been ill and was convalescing) to sit down while I went to see if it was worth going into. I took one look, and came back to tell Holden, 'My Lord, Holden, it is the Sistine Chapel with the ceiling and Last Judgment flood-lighted!' So in we went — there was plenty of room as half the Congress did not know it was to be open. A glorious effect — coming in the main portal instead of the little side door one usually enters by. And with the lighting! Well, we had an unforgettable quarter of an hour — just looking and looking — till the ushers began to gently urge people to the door. A glorious ending to a memorable occasion."

Our Assistant Secretary, Elliot R. Barker, was stricken with a heart attack in late August and again in early September, the later attack being quite serious. After the September stroke, he remained in bed; and then in about three weeks, with rest, expert medical care and the constant watchfulness of his wife and daughter, he was able to start sitting up. When we called on him a week ago, he had progressed to the stage where he could leave his bedroom and sit up in his upstairs sitting room and receive callers. His mind was clear and he conversed freely on business and allied subjects, but it was good to see Elliot returning to his normal vigorous self.

Through the courtesy of the Alumni Office we have been advised of the passing of another classmate, James W. Shook of Birmingham, Alabama, on July 28, 1955. We trust to have further information later for the Class Notes.

The Secretary attended the Annual Convention of the American Association of Textile Chemists and Colorists held at Atlantic City, September 21-24. Members of '98 will be interested to learn that the present incumbent of the presidency of this association is Raymond W. Jacoby, M.I.T.'10, a brother of A. H. Jacoby of the class of '98. Next year the Perkin Centennial commemorating the discovery by Perkin of mauve, the first synthetic dye, will be held in New York the entire week of September 10, 1956 under the auspices of the above association, in co-operation with 28 other scientific societies and various departments of the United States Government. Mr. Jacoby is General Chairman. Many classmates may wish to attend the Centennial as already there are plans for many remarkable and interesting features. We have made our reservation for the whole week at the Chemists' Club, where we shall be pleased to welcome any and all members of the class.

As this is the issue of The Review just prior to the Holidays, we will conclude these Notes by wishing all the boys and girls of '98, their children, grandchildren, great-grandchildren, and in-laws a very Merry Christmas and a very Happy New Year. Don't forget to send in material for the notes. — EDWARD S. CHAPIN, Secretary, 2 Gregory Street, Marblehead, Mass. ELLIOT R. BARKER, Assistant Secretary, 20 Lombard Road, Arlington, Mass.

## • 1899 •

Through the kindness of Ed Packard, who spends his summers at Hull, Mass., I am now able to give more particulars relating to the death of Col. Brainerd Taylor, whom many of you have not known intimately but will remember as a captain of one of our four companies in our freshman year. He was fatally stricken August 21, at his summer home in South Hall, New Boston, N. H. The following obituary is from the Mansfield (Mass.) News: "Col. Taylor was a veteran of three wars, following his enlistment on June 21, 1898, as a private in 'A' Company of the Sixth Massachusetts Volunteer Infantry that participated in the Spanish-American campaign. He also fought in the Mexican Border War in 1916 and in World War I. He was in command of motor pools and automotive sections during many years of his service. At one time during his long career, he led a winning fight in Washington, D. C., to have automotive firms agree on basic designs for Army vehicles to greatly reduce the amount of spare parts stocked for overseas shipments. He was a member of Harvard University's Class of 1901, active in class affairs, and long a member of the Army-Navy Club in Washington, D. C. During his residence in Mansfield, he attended the Orthodox Congregational Church." — BURT R. RICKARDS, Secretary, 381 State Street, Albany, N. Y. MILES S. RICHMOND, Assistant Secretary, Little Compton, R. I.

## • 1900 •

It has been a matter of some concern that these notes have had to be made up, to a large extent, of obituary notices. This month we are happy to say that we have no such notices to report. Moreover we have the unusual opportunity of reporting the removal of one name from the deceased list to that of living members. Clifford Norton entered the Institute with us but in our sophomore year he transferred to Harvard and graduated from the Lawrence Scientific School in 1900. We soon lost track of him and all these years his address has been unknown. Following their custom in such cases the Alumni office transferred his name to the list of deceased members. Recently Walter Katelle, looking through the Harvard Alumni Register, ran across the name and remembered knowing him in our Freshman year. We immediately got in touch with Cliff and found out that it is indeed the same man. He says that he is in excellent health, playing golf at least twice a week, and is very active in business. For 20 years he was with the Otis Elevator Company in their Engineering Department, in charge of Research and Development. He retired January 1, 1949 and now represents 5 or 6 companies in and around New York and New England. He has an office in Newark, N. J., and lives in Chatham, N. J. If any one can similarly dig up another of our unknown members we shall be very grateful. — **ELBERT G. ALLEN**, *Secretary*, 11 Richfield Road, West Newton 65, Mass.

## • 1901 •

Ed Davis writes me his impressions of the Alumni Conference held at the Institute last Fall, high-lighted by an informative and bracing address by President Killian. He says, "I gained a poignant realization that the M.I.T. we are all loyal to and devotedly helping is not at all the Institute of our old memories or even of our recent visits and inspections — fine as indeed these are — but a new and wonderful institution of tomorrow and of the decades to follow tomorrow. Equipment, faculty, curriculum, student life and organization, and a dozen aspects we naturally think of, these are in fact only the shell of the cocoon. The nut itself is the new and modernized student body (50% post-graduate), and the milk in the nut is the ever-rising quality and competence of the training they get, and the sugar in the milk is the marvelously planned endeavor to distill from all this the vital X percent of original and creative thinking — which must operate to make our country of 1975 as much ahead of 1950 as that was ahead, not of 1925 but of 1900. This was not merely explained in words but demonstrated in a series of campus case-studies, from Physics Laboratory, Mechanical Design and the Humanities to Methods of Research — nuclear, meteorological and in automation. And to 'clinch the rivet,' three admirable Senior students reported upon the self-government system in dormitories, fraternities and Institute Committee, and demonstrated to us graduates of the 60 classes there represented that the *essence* of Tech, its student body, is

as forward looking as the whole spirit of the Institute itself. Does this sound like a piece of intoxicated journalism? Truly it is not. It is a sober and reasoned effort to report what I and hundreds of my fellow alumni experienced inside of ourselves at that Conference."

I will try and finish most of last year's Class Letter replies before a new set comes in. Charles Lincoln, V, in Hartford, Conn., says: "Although retired from the daily grind, I keep busy and happy teaching and writing." His wife adds: "Charles' idea of being 'retired' is slightly misleading. It's true he did retire from business in 1951. Since then, however, he has taught one summer in Maine, substituted in the high schools of Greater Hartford and surrounding towns almost daily, has been tutoring afternoons and several evenings a week in Math, Sciences, Spanish, French, English and History, has taught Spanish in evening school and is currently teaching a course in 'Great Books' at the Institute of Living in Hartford. He also finds time for many social activities. Outside of this, he leads a quiet life."

From Ralph Sterns in Bronxville, N. Y.: "We have been living in this house for 32 years. Bronxville, although close to New York City, has maintained its fine character. Fred Clapp's family is still living here in a beautiful home. We have a forum of 65 members, meeting at the members' houses, of which I have been secretary for 4 years. Also a Senior men's club of our church in which I am active. I am a veteran member of a country club but am restricting my golf to 9 holes. Our travels have not extended beyond Florida and the West Indies, as European trips seem too much of an effort. It is surely sobering to read your list of our late classmates. On April 22nd I called on Leonard Wood, I, of our class who is at the Westchester Division of the New York Hospital. He has done many years of intensive work at the Board of Water Supply's New York office. He has lost the sight of one eye and until he has an operation, can see little with the other eye. Otherwise he appeared well."

Ed Seaver, II, writes from Duxbury, Mass. "Am looking forward to our 1956 class reunion. Have you noticed as you get older how prone you are to talking over old times and the memories it brings back? Well, our next reunion will take me back 55 years to graduation or 59 years to when we entered Tech and that is equivalent to a lifetime for a great number of people and how lucky we are to be still breathing the good old ozone and watching history being made. I am still hale and hearty enough to drive to Florida about Nov. 1st for the winter and expect to hobnob with Bill Hogle in Clearwater. If any other '01 men are in the general vicinity drop me a line and we will have a preliminary reunion."

I have the following preliminary information concerning our 55th reunion from Willard Dow, the Committee Chairman. The clans will gather at 'Castle Hill' in Ipswich, Mass., on Friday, June 8. According to Willard, this is a wonderful place for a reunion. On Friday evening Bob Derby will show slides which he has taken on his trips to the far south. Saturday

will be devoted to the usual gab-fests and any other recreation which may appeal. The Class Dinner will be on Saturday night. During this time the ladies will be provided for. Sunday, departure may be made at any desired time. Alumni Day at Cambridge is, of course, on Monday. More detailed information will be given later. It is urged that you make up your minds as soon as possible about coming so you may reply promptly to any questionnaire. — **THEODORE H. TAFT**, *Secretary*, Box 124, East Jaffrey, N. H. **WILLARD W. DOW**, *Assistant Secretary*, 78 Elm St., Cohasset, Mass.

## • 1902 •

Through a clipping from the Alumni Office news has been received of the death of Milton C. Dunham, Course III, on July 15, 1955. Prior to the time of his death he had been a resident of San José, Costa Rica. For several years after graduation he followed the mining industry in California and Nevada and then went to Costa Rica and was likewise engaged in mining. Then he became interested in agriculture and conducted a cattle ranch and several large coffee farms. Dunham was a native of West Bridgewater, Mass., and during his last illness had lived with his sister, Mrs. Howard Richards, of that town. He was unmarried and besides his sister leaves a brother, Henry, of Delray Beach, Florida.

There is no other class news due to the lack of letters from our members except that Lewis Moore is now class representative on the Alumni Council having been appointed to fill the vacancy left by Hunter's death. — **BURTON G. PHILBRICK**, *Secretary*, 18 Ocean Avenue, Salem, Mass.

## • 1903 •

The much traveled Joyces — Clarence M. and his wife — sent an extensive itinerary of their travels during the past summer to your secretaries last June. Their travels began on the *Britannic*, June 15th, and they arrived back by the same ship the first part of August. Clarence sends us the following description: "The only part of our trip this summer that would be of interest to you is what Wagner called the 'Rhine Journey.' Epper's car rental service, Lucerne, Switzerland, which I can highly recommend, sent us a car to Amsterdam to bring us back to Lucerne. The car and driver both were excellent. We spent the first night at a splendid hotel at Düsseldorf, the Breidenbacher Hof. Although an industrial city there is a large park in the center with trees, lakes, lawns and flowers. The next night was spent at the Hotel Krone in Assmannshausen on the Rhine, near Bingen. The Krone was formerly a castle. It was so near the river that one could hear the rush of water through the night! We drove to the top of the Lorelei Cliff where a large number of visitors crowded to the rail where the sirens lured the boatmen to destruction. The third day we drove through Wiesbaden to Heidelberg where we spent three days at the Park-Hotel Haarlass. This hotel was nothing extra except that it lay on the Neckar river which was most beautiful in the night illumination. The University of Heidelberg consists of isolated buildings



scattered around the city. The beer halls, famous in light opera, where the students sing have apparently disappeared. We took a boat ride on the Neckar through two locks to Neckargmünd and Neckarstein. The scenery is similar to the Rhine with castles and mountains. In Wiesbaden and Heidelberg we were amazed at the number of U. S. army cars and trucks, not to mention U.S.M.P. control of 100 miles of the Autobahn. Over half of the hotels in this area are still used for U. S. troops. The fifth day we drove along the Schwarzwaldhochbahnstrasse to Freudenstadt, stopping at the famous spa Baden-Baden en route. There the Brenner's Park hotel is beautiful beyond description. There were fine shops, too, featuring unbelievable prosperity in Germany. That night was spent at the Hotel Luz Waldlust at Freudenstadt overlooking a broad valley of the Black Forest. On the sixth day we followed the route all through the Black Forest Schwarzwald. We had lunch at the Hotel Adler in Hinterzarten, Titisee, after passing the Höllental or 'Hell Valley,' a gorge-like Ausable Chasm. The trees are very dense and are conically shaped like Christmas trees. Titisee is a most beautiful lake in this area where there are many large hotels. At night we came on Lucerne by way of Zurich and were again on familiar ground." George H. Donham, who took some courses with our class, celebrated his golden wedding anniversary with Mrs. Donham in Upton, Mass., in June. The "Worcester Gazette" has this to say about them: "Mr. and Mrs. Donham have resided in Upton forty-two years. He has observed only seventeen birthdays, having been born on leap year day. He studied at M.I.T. and taught manual training at Manchester, New Hampshire, University of New Hampshire, and Trade School at Leominster. For many years he was a draftsman in large Worcester plants before retiring. He is a trustee of the Public Library." Congratulations to the Donhams. Robert A. Cook, I, died in Chicago on January 26, 1955. He came to the Institute from Woonsocket, R. I., and after graduating worked for the City of Chicago for many years and in 1948 was Supervising Engineer for the Reconstruction Finance Corporation in Detroit, until his retirement. He apparently moved back to Chicago after retirement. Fred Eustis writes from his summer home in Cataumet, Mass.: "As for myself, I have gained strength and health very satisfactorily this summer and am looking forward to being a little more active this fall. I tire more easily than when I was younger and strength is improving but I fear the years are making my progress slow." Our best wishes to Fred and hope that he will consider retiring permanently and take it easy. Hewitt Crosby, XIII, writes from his home in Sarasota, Florida, "It is good to have some news of classmates. My regards to all of them when you happen to see them, especially to Tom Sears. W. C. Lounsbury and his wife called on us here last winter but I have not yet been down to Fort Myers. We are looking forward to that this winter. We plan to make this a year-round home and we have been very comfortable this summer.

We were in California to see a new grandson in May but cut our visit short because of the death of Helen's brother."

Cushman, Assistant Secretary, Carleton Green, Class Agent, and George Garcelon, an officer of the Springfield, Mass., M.I.T. Club, attended the first Annual Officers' Conference at the Institute on September 9 and 10, and heard various talks on "Educational Progress" and "Research Progress" and "Undergraduate Student Government" at M.I.T. Some three hundred officers of classes, and clubs, members of the Alumni Council and Honorary Secretaries attended the sessions, were housed at Baker House, and treated royally at the Institute's expense. Discussion conferences with the chairmen of the Alumni Fund Board, with the Executive Secretary of the Educational Council, and the Executive Vice President of the Alumni Council, briefed the class agents and officers and the Honorary Secretaries and the club officers, respectively. Dr. Killian addressed us happily and instructively at a buffet dinner in Walker Memorial. Saturday afternoon we had a chance to inspect various laboratories and buildings. — FREDERICK A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, Box 103, South Wellfleet, Mass.

#### • 1904 •

Well, here it is October 13 and time for the concocting of another set of Class Notes for the December issue of The Technology Review. As they are due in the Editorial Rooms on October 14, it certainly is high time said notes were prepared. From the scarcity of material from which I prepare them, it should not take very long.

About October 1, I received a card from Carl J. Trauerman '07 accompanied by the following clipping from the *Montana Standard* of October 1, 1955, announcing the death of our classmate, William Arthur Kemper, S.B., Course V. "William Arthur Kemper, 74, native and lifelong Butte resident, died in a local hospital Friday, following an illness. Mr. Kemper, who resided in the Napton Apts., was manager of the Butte Land and Investment Co. He entered government service after graduating from M.I.T., and went to the Philippines for three years as a civil engineer. In 1908 he returned to Butte to join his father in the investment company.

"For many years, Mr. Kemper was vice president and a director of the Miners National Bank. Surviving are two sons and one daughter-in-law, a grandson, a brother and sister, and several nieces."

Later I received a letter from Miss Helen E. Kemper, sister of our classmate, which I insert here. "Mr. Trauerman told me that you had been informed of the death of my brother. Mr. Creaden, chairman of the Montana Alumni Association, has urged me to write you and tell you that he feels that the information given is inadequate. Mr. Creaden has given me some notes regarding Arthur. At a later date I shall write you elaborating on this information." When I receive this additional information, I shall be sure to share it with you all in a later edition of The

Review, and I am sure we all shall be glad to know more about our classmate and his life.

David Sutton was stricken with a cerebral coronary last spring and was quite ill for five months this past summer and as these notes are written has progressed fast enough along his road to recovery to be able to go to his office a couple of days a week. I am sure we all hope that by the time you all read these notes his progress along this road to recovery will have brought him back to the point where he can go to his office more than a "couple" of days per week. I talked with him on the phone today and he assures me it was "no fun" to be totally incapacitated for five weeks.

Well, brothers and sisters of '04, that's all there is for this time, there isn't any more. Perhaps there is something wrong with my receiving antenna but I have repeated everything in my reception. Always hoping to get more material from you all, I am most sincerely — HARRY W. STEVENS, *Secretary*, 1082 Commonwealth Avenue, Boston, Mass.

#### • 1905 •

You have already read the very interesting and comprehensive notes which Gib and Elizabeth Tower wrote concerning our Golden Anniversary. I am sure you will extend with me our cumulative thanks for a job well done. It took a big load off my shoulders and I certainly would not have had time to take the necessary notes. Our narrators ended the story of the West Harwich part of the reunion with the statement that we left after dinner on Sunday. Not all of us. The Mitchells, the Klahrs, Frank and May Chesterman, Waldso and Helen Turner, Roy and Andrea Lovejoy, Frank and Grace Drake, Dan Harrington, Wallace Taylor and Ruth and I stayed over until Monday morning enjoying two more of the splendid meals and a delightfully chummy confab around the fireplace. All of us remember C. D. Klahr's famous ascent into Charlie Cross' lecture room. I shall never forget C. D. sitting in front of the fireplace that night, with a Davy Crockett hat on his head, holding grandson Chad in his lap and reading Davy Crockett to the edification of this group.

Lack of space prevents the detailing of a lot of the little intimate things which happened at The Belmont. I can't help mentioning the picturesque Argentinians, Jack and his Senora, and Jack saying in his Spanish-Irish brogue, "I am not Mr. Flynn. My father was Mr. Flynn. There was Mike and Pat and Dennis and Jack. I'm Jack Flynn." Also, as it seemed to me, the way those not directly connected with class associations fitted into the picture, Mrs. Thayer Emerson, Ralph's son's wife, Mrs. Gow, Charlie Mayer's daughter and Mr. Gow, Mrs. Barbara Brown, George Rhodes' daughter, Mrs. David Sturgis, Bob Adams' sister, and of course, Chad Klahr, to whom we gladly give 100% for behavior and good cheer. A sad commentary on a perfectly delightful occasion is that two of our members attending the reunion have since passed on, Charlie Emerson and Arthur Gerry. Obituaries later.

Another amazing (to me) commentary is that in spite of the abundance of cameras and moving picture takers, and the promise of several to send samples of the results to the secretary, not one has been received at this writing. We learn that since the reunion Eugen F. Kriegsman has moved to 102 W. Jefferson Street, Boise, Idaho, apparently in retirement from his position in Washington, D. C. Roy Allen, having had sufficient leisure, has gone to Blythe, Calif. (154 So. Palm Drive) on a six to eighteen months assignment with the Palo Verde Immigration District on a pumping plant, canals, structures, etc., in connection with the new dam to be built across the Colorado River. What a man! Frank Chesterman modestly stated that some time before the reunion he was awarded the Silver Buffalo, the highest national honor in Boy Scouts. Don't think this didn't take an enormous amount of time, energy and good-will.

Prior to the reunion we had some interesting bits of news from classmates. Fred A. Pirie of the old musical team of Pirie and Killion wrote that a couple of physical set-backs would keep him from joining us. He is continuing business (general contracting) in a small way in Lynn, Mass. He asked to be remembered to "the boys" with best wishes for good health. Herb Bailey of Ontario, Calif., couldn't make the reunion, as the Bailey boys (five brothers) have their "five-year" at Cape Cod in 1956. Herb is busy on the County Civil Service Commission and adds that his county is the largest county in the U.S.A., which means a lot of leg work at times. Through John Ayer we learn that Harry Gabriel's failure to attend the reunion was due to the fact that Mrs. Gabriel fell and fractured her hip, meaning five months hospitalization. While visiting at the hospital Harry was stricken with a coronary thrombosis, from which he is happily recovering and expects to return to work in October. He is with the County Engineering staff.

Jack Flynn writes from Buenos Aires on Oct. 6 that he arrived back in Argentina "in plenty of time to see the fireworks." You can't blame him and Susana for not hurrying back. After the reunion they toured the U.S.A. and Canada, stopping in Idaho "where I gold-mined 45 years ago, and Pittsburg, where I majored in Armo many years before first going to Argentina, a total of 9000 miles without a puncture." John Damon, with title U.N.C. Economic Coordinator at Seoul, Korea, writes that his personal situation is "very nice. Many features not so nice, which could have been vastly better if MacArthur had been given a chance."

Walter K. Gillett, V, has moved to 928 Elizabeth Street, Pasadena 6, Calif. Lloyd Buell, IV, to 159 South Kingsley Drive, Los Angeles 4, Calif. It is my sad duty to report a number of deaths since last writing. C. Waldo Adams of Detroit, Mich., in May 1955; Miss Cecilia A. Lemner, VII, of Boston on June 6, 1955; James N. Cladding, II, of Fontana, Calif., on Jan. 31, 1955. No other information on these available. Ray H. White, VIII, whom I visited in Somerville, S. C., last April, and whose condition then was

pathetic, died on June 15, 1955. Ray was a graduate of Rochester (N. Y.) University, went from M.I.T. to the Norton Co., was later vice-president of the Simons Saw and Steel Co., retiring in an advisory capacity in 1945. Did research work for the Lackawanna Steel Co. of Buffalo and the Pennsylvania Salt Company in Natrona, Pa. Charles A. Emerson, XI, died at his home in East Orange, N. J., on August 24, 1955. Before coming to M.I.T. he received a B.S. degree cum laude at Beloit College in 1903. He was chief engineer for the Pennsylvania State Health Department from 1911 to 1922, then with Fuller, Fuller & McClintick of New York until 1936, when he formed the firm of Havens and Emerson, and carried on activity until just before his death. Just a few hours before writing these notes I learned of the death of Arthur P. Gerry of Guilford, N. H. No other data available at this time. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston, Mass. GILBERT S. TOWER, *Assistant Secretary*, 35 North Main Street, Boston, Mass.

## • 1906 •

These notes are being written on October 13 and news seems to be very scarce. The clipping bureau did provide one item that was taken from the *Textile Bulletin* of Charlotte, N. C., issue of last June, which noted Herbert Ball's retirement from the Lowell Technological Institute, which this column covered in the November Review. The fact that this news was included in this national textile publication is an indication of Herbert's reputation in the textile industry. At this writing our 50th or Golden Anniversary is about 8 months away or, as you read this, it will be less than 6 months away. We hope that you are already making plans to attend. By this time you should have your first general letter outlining our program for June 8-11 next year. If you have not already returned the questionnaire, please do so shortly. Even if you cannot attend all the events, by all means try to be in Cambridge on either June 8 or 11, or both. Classmates who have not been in Boston for a number of years will see startling changes in the city; also the new M.I.T. will symbolize the technological advances which have been made since our undergraduate days. Besides these tangibles, your attendance will make possible a renewing of associations which is an experience which will be the most enjoyable feature of the occasion. In other words, come if you can; it will be worth it. — JAMES W. KIDDER, *Secretary*, 215 Crosby Street, Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

## • 1907 •

In my notes for the November issue I recorded the death of Edward F. Kelly, which occurred on September 26, 1954, and gave a few available facts regarding his life. I now have more complete information received on October 3 from his son. Before entering M.I.T. Ed attended the United States Naval Academy at Annapolis. After graduating from Tech in 1907 he was employed by New

York Edison Company as a power salesman, and was assistant manager of their power department when he became a power salesman for Central Illinois Public Service Company at Springfield, Ill., on March 1, 1913. He soon became assistant manager of that company's commercial department. On May 26, 1917, he answered the call to service, and for 26 months of World War I he saw active duty, most of the time overseas as a captain in the 301st Engineers. In July, 1919, he returned to the Central Illinois company as a division manager. In 1928 he became executive manager at their general office in Springfield, a company director in 1930, and in 1932 a vice president and director. On April 27, 1949, he was named chairman of the board. In August, 1953, he requested retirement from active duties but continued as a director until his death. His wife died in 1951. Surviving are the son, Edward F. Kelly, Jr., who is an industrial engineer with the company where his father spent most of his business life, and three daughters, none of whom are married.

I have been writing many letters during recent months in connection with class affairs, chiefly relating to our campaign to raise money for our 50-year class gift to M.I.T. to be presented in June, 1957. This project is progressing splendidly. I have not received from classmates much information of a kind that can be included in these notes. Anthony Arnold wrote me last August of the lovely half, or single, mansard roofed three-story house built in about 1860 in which he and his wife live, located at 538 Lawrence Avenue, Westfield, N. J., and the two formal flower gardens and one wild flower garden which are on his property and to which he devotes all his time from April 1 to December 1 each year, as he is retired from active business life. He wrote me, "We usually close the house and travel in the winters. Sometimes we stay in New York. Not having cats, dogs, burros or birds, we simply turn off the water, lock the door, and go. We do quite a bit of reading of books and try to keep our minds from going to seed. We have no television — don't have time for it and don't want one. Some people call us old-fashioned, but we have a good life and a pleasant one."

Clarence Howe, Canada's Minister of Trade and Commerce, frequently makes the news in newspapers and magazines. On October 3 he was the principal speaker at a general convocation at M.I.T., at which President Killian presided, and at which members of the Institute's corporation were guests of honor. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

## • 1908 •

Hope you all had a bountiful Thanksgiving and that you didn't eat too much. So now you should be in shape for Christmas shopping, getting out your Christmas and New Year's greetings and working up steam for wonderful Christmas and New Year's celebrations. News is still scarce — why not send some in? You must have had some interesting ex-



periences during last summer — why not tell us about them?

The Class has received some reflected glory, as during part of the summer past (in June) Dr. Harold S. Osborne was decorated by the Government of Sweden as "Knight of the Royal Order of Vasa, First Class," in recognition of his services over a period of years in assisting the Swedish Department of Telecommunications. The decoration ceremony was held in the Board Room of the Royal Board of Swedish Telecommunications in Stockholm, and the presentation was made by Dr. Hakan Sterky, President of the Royal Board. Following his visit to Stockholm, Dr. Osborne attended in London the meetings of the International Electrotechnical Commission of which he was president. These meetings marked the completion of his three-year term as president of that organization.

We are sorry to report the death of Albert Emery on July 2, 1955. The following from the Portland, Maine, *Press-Herald* will be of interest. "Born in Boston, Mass., Albert Emery attended M.I.T. and was a graduate of Harvard College. Mr. Emery retired from the U.S. Rubber Co. in 1950, after a 40-year association with that firm. Prior to that he served as a research chemist at the Carnegie Nutrition Laboratories in Boston. During World War II, he was special adviser to the Navy in the development of rubber contour maps of invasion ports. He was librarian of the Portland Men's Singing Club and a member of St. Luke's Cathedral, where he sang regularly in the choir. Surviving are his widow, the former Philena Harmon Colbeth; a daughter, Patricia Emery Bernheim, and three grandchildren.

The second dinner meeting of the 1955-56 season will be held at the Faculty Club, 50 Memorial Drive, Cambridge, Mass. on Wednesday, Jan. 18, 1956 at 6 p.m. Hope you can be with us. Be generous when giving to the Alumni Fund. Remember that your gift helps to build up '08's 50th year gift to the Institute. — H. LESTON CARTER, *Secretary*, 14 Roslyn Rd., Waban 68, Mass. LINCOLN MAYO, *Treasurer and Assistant Secretary*, 47 Alton Place, Brookline 46, Mass.

## • 1909 •

In the November number we stated that, as class officers, Jim Critchett, VIII, and your secretary attended the Alumni Conference at the Institute on Friday and Saturday, September 9 and 10, and a very brief report of the Conference was included in these notes. It was stated that Jim would tell us of his personal impressions of the Conference and he has done so in the following: "Here are my impressions of the recent Alumni Conference which I promised. I got such a lift out of the first Conference that I have a feeling you and I who represented the class should pass it on to our classmates. The actual events are so well covered by the Review that there is no need to go into them but rather to deal with the atmosphere and fringe events. M.I.T. did itself proud in the arrangements for caring for the comfort of those present and for organizing a full day and a half program. Everything went along so smoothly giv-

ing proof of the painstaking care with which it was planned and organized. But who would expect less from M.I.T.! It was a pleasure to meet again those old friends of our vintage but beyond that, the appearance and earnestness of the entire group were an inspiration. They represented M.I.T. well and I am sure would do so under all circumstances. What we were told of the changes in curriculum and methods of teaching and what we learned of the present undergraduate activities indicates a certain improvement in education in breadth as well as in thoroughness. At the same time the extracurricular activities are fuller, more rounded out and I am sure more satisfactory to the students.

"The outstanding event was the address by President Killian Friday night. He went fully into the present day problems of M.I.T., among them the need for better trained freshmen, the costs of present day operations, the complications brought about by research operations for the nation, and the need for alumni support in many ways. The problems seemed large but were handled in such an optimistic vein as to leave a feeling of great confidence in the administration of the Institute, one alumni can support without reservation. The overall feeling was one of renewed pride in the Institute which did so much for each of us, a feeling that it is an even better school than we knew, and faith that it is continuing to progress and develop.

"The other day I dropped in on Chet Pope, X, in Yarmouth. He seemed in very good spirits, about the same as at our forty-fifth in Chatham. He has reduced his business responsibilities but has kept a very lively interest in all that is going on businesswise and otherwise."

In a release from the U. S. Department of Labor, as well as from a clipping from the New London, Connecticut, *Independent Republican*, we learned of the appointment of Johnny Nickerson, II, to a newly created advisory committee on atomic energy installations by Secretary of Labor, James P. Mitchell, and David L. Cole, chairman of the committee. The committee will study all facets of the problem, including the role of government in this area and will make recommendations on improvement of the machinery for settling atomic energy labor disputes. As many may recall, Johnny formerly served as a consultant for the War Production Board and was a member of an 18-member advisory committee for the former Mutual Security Agency.

Ben Pepper, I, with his wife Barbara, sailed September 20th from Montreal on the *Empress of Scotland* for approximately a month's trip. They were met at the pier in Glasgow, Scotland, by the chauffeurs who drove them around England last year. This time they are spending a few weeks touring Scotland, the Highlands, Lake Section, and London. Then they go to France, Italy, and Spain, returning early in November about ten days before their younger son, John, is to be married to Ann Gardner, daughter of Mr. and Mrs. Alfred Gardner of Sudbury, Mass. Mr. Gardner is president of the Boston Bar Association. The bridal couple will reside in Marblehead where they have purchased a home.

John is with Dewick and Flanders, Inc., Boston, the insurance agency which Ben heads. Ben's elder son, Edward, Tech '42, is with Arthur D. Little Company and owns a home in Hingham, Mass., near Ben's summer home in the Crow Point section overlooking Hingham Bay. Edward and his wife, Ruth, have two children, Robby, six and Randy, three, Ben's and Barbara's pride and joy. (We are indebted to Johnny Davis, II, for this news item. Johnny also has a summer home at Crow Point, almost next door to Ben's.)

Bob Keeney, III, sent us a clipping from the New York *Times* telling of the death on October 1 of Risdale Ellis, VIII, at his home in Larchmont, New York, from heart disease. He was sixty-eight years old. Dale's home was originally in Leicester, England, and he prepared for the Institute at Owens College in Manchester. Dale was most active in both class and Institute affairs. We all remember him as a runner, being a member of both the Institute Track Team and the Cross Country Team, and secretary and captain of the latter. He was also a member of the British Empire Association and the Class Day Committee. He became a well-known patent attorney in New York. He was always interested in boating and yachting and at different times possessed boats of his own. He was the author of several books on maritime and patent law and your secretary has a complimentary copy of his book, "Coast Guard Law Enforcement." He was most active in '09 meetings in the New York area, particularly when the late Paul Wiswall, V, was class secretary and headed up the New York group. Dale leaves a widow, the former Caroline Tuck, and two sisters, Mrs. Miles Walker and Miss Hilda M. Ellis. Your secretary has already written to Mrs. Ellis, expressing the sympathy of the class. — CHESTER L. DAWES, *Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: HARVEY S. PARDEE, 549 W. Washington Street, Chicago 6, Ill.; MAURICE R. SCHARFF, 366 Madison Avenue, New York, N. Y.; GEORGE E. WALLIS, Wenham, Mass.

## • 1911 •

Less than ten days after he had accepted an appointment as the 1955 Boston Area Chairman for the Annual Salvation Army Appeal (this year for a goal of \$556,000, ultimately reached) our distinguished classmate, Albert Olaf Wilson, I, of Winchester, Mass., was stricken and died on September 19th at the New England Deaconess Hospital, Brookline. Funeral services were held at the Park Street Church, Boston, of which church Al had been a trustee and for some years treasurer. 1911 was represented by Dennie Denison, VI; Henry Dolliver, I; John and Mabel Herlihy, II; Arthur and Mary Leary, XI; and Carl G. Richmond, I. The pastor, Dr. Harold Ockenga, paid our classmate a glowing tribute as to his character, worth and specifically his devotion to the work of the church, while the chancel was more than filled with floral tributes.

Born in Cambridge, Al prepared for M.I.T. at Rindge Technical School there and was an active and popular member

of our class. He was a member of the class tug-of-war team for both our freshman and sophomore year Field Days; was active in the Civil Engineering Society; tenor soloist for the Glee Club in his junior and senior years; and a member of the Technology Club.

In 1923 he founded the A. O. Wilson Structural Company in Cambridge, of which he was president and treasurer and later he also created and headed the A. O. Wilson Co., fabricators of structural steel and was a past president of the Metal Fabricators Association and the Structural Steel Fabricators of New England.

Outstanding accomplishment of his brilliant career was during the year 1940 through 1948, when he was Swedish consul in Boston. He was believed to have been the first native of this country to represent the Swedish Government in that capacity and for that service he was raised to knighthood by the King of Sweden. He was also moderator of the Swedish American Council, a trustee of the North Avenue Savings Bank of Cambridge and a member of William Parman Lodge of Masons in Winchester. He was also president of the Economy Club of Cambridge, a past president of the Cambridge Chamber of Commerce and Cambridge Rotary Club, and a member of the Harvard Faculty Club.

Aside from his business and civic interests, Al was identified with many philanthropic projects. He had been active in Salvation Army work for many years, having served as a member of the executive committee of its advisory board in Boston. He was also founder of the Albert O. Wilson Foundation, Inc., a charitable organization greatly interested in the work and progress of Gordon College of Theology. Al played a key role in the expansion of the college and in its moving from Boston to new quarters on the old Prince Estate in Wenham and Beverly Farms, having served as chairman of both the college executive and building committees.

Always a lover of music, Al had studied voice with several Boston teachers following graduation. His fine tenor voice was heard at many musical affairs in Cambridge, where for 30 years he had been choir director of the old Swedish Mission Church, now the Covenant Church. In Winchester for several years his solos were features of the New Year's open houses held by the Masonic Lodges in Winchester, where he had lived for the past 36 years. Interested also in art as a boy, Al had resumed his interrupted studies in recent years, producing a number of pleasing pictures in water color, charcoal and pencil.

In October, 1912, Al married Anita Karin Barge of Winchester, and she survives, with a daughter, Mrs. Wilbur H. Norseen of Bolton, Mass.; two sons, Albert O., Jr. '38 of Lexington and Donald B. Wilson of Concord, both associated in business with their father; a sister, Mrs. Esther Landall of Cambridge; two brothers, Axel, of Arlington, and Oscar, of Cambridge; and ten grandchildren. 1911 has suffered another irreparable loss.

General George Kenney, I, is reported to have issued another warning against

Russia's might — noted in today's (Columbus Day, as these notes are being typed) newspaper. Our noted Air Force commander in the Pacific during World War II spoke before the Washington Advertising Club in the Capitol City, warning that the Soviet Union has the greatest military machine in history and the U.S. lacks the "counterpunch" to reply to a sneak Red attack.

"There is no question about the adversary," said George. "It is the might of the gang in the Kremlin, which has behind it 35 years of broken promises, thievery, tortures, and other disregard for the rights of mankind. This is the power behind the biggest military machine the world has ever seen and it is well equipped by anyone's standards."

George added that the United States, as of today, just cannot equal Russia's air power, which "leads the world," and he urged all to recognize the peril. In conclusion he told his hearers that the Reds have six times the number of submarines that Hitler commanded at the peak of his power and they lead the world in numbers of modern bombers and fighters.

Nearly two years ago we reported the retirement of Bill Martin, VI, after years of outstanding accomplishment with Bell Telephone laboratories. Proving that you can't keep a good man down, we now learn that Army Secretary Brucker a month ago appointed Bill — who had been serving as Deputy Assistant Secretary of Defense for applications engineering, as Director of Research and Development for the Army "in charge of all plans, implementation and financing of research and development projects Army-wide."

Mr. Brucker said that our William Hennick Martin would "exercise the same degree of responsibility as an Assistant Secretary and be given complete authority over Army research programs." According to the *New York Times*: "The appointment answers some criticisms by the Hoover Commission . . . which has said that some research functions suffered because of overlapping activities. Improved Army organization is expected from the new appointment. His work in the applications engineering field was designed to bridge the gap between pure research and production. An applications engineer takes a product developed in research and determines what engineering steps are required before it can be successfully produced." Best wishes, Bill, in your new responsibilities!

A photo in the *Boston Herald* in late September, showed our Carl Ell, XI, president of Northeastern University, Boston, accepting an \$18,874 check toward NU's classroom-laboratory building fund, from Business School Alumni President Walter Hanf. — President Don Stevens, II, reports an enjoyable stay during late September at Monhegan Island, near Friendship, Maine, with the Ridgewood (N.J.) Art Association. Received a gaily stamped envelope from Valencia, Spain, in late September, but it contained no letter — just a clipping from Harold Smith, II, from the *Daily Express*, London, September 20, containing a quote by our beloved late Karl Taylor Compton: "No young man today

need fear the future. I believe that the young man of ideas, ambition, and ability can look forward to the greatest opportunities in history." Next trip "Write to Dennie," Harold!

I hope by the time you read these notes you will have your mind all made up to attend 1911's 45-Year Reunion at Snow Inn, Harwichport, on Cape Cod, June 8-9-10 and have so advised Dennie. If not, please do so at once — first come, first served, you know, on rooms and the Thompson family, genial owners and operators of Snow Inn, want to please everyone. See you there.

Finally for the other class officers — Don, Howard and Jack — and for myself personally, a Very Merry Christmas and a Happy and Prosperous New Year to all Eleveners and their families and friends! — ORVILLE E. DENISON, *Secretary*, Chamber of Commerce, Framingham, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

## • 1912 •

A letter from Lawrence T. Cummings says that since he retired last Spring he is certainly doing quite a bit of travelling, going down to Florida for the winter and around the Gaspé Canadian trip this Spring.

He had a pleasant visit with Dexter at Poughkeepsie and was quite impressed with the size of Dexter's office, which he said looked like a dance hall.

He is keeping busy with travelling, fishing, some consulting work, fund raising for his church — sounds like a good life.

Gene Marceau writes from 1828-20th Avenue, N. St. Petersburg that he will be delighted to see any of you who are travelling in Florida this winter, as he is there the year round.

Aurelius P. Hornor, R.D. 5, Carlisle, Pa., writes that he retired to Carlisle after leaving Thos. A. Edison, Inc., because two of his sons have a dairy farm nearby and because he liked the surrounding country. He has a few acres of land which adjoins his sons' farm. He admits to giving unwanted and unneeded advice now and then. I know he would be delighted to see anyone passing through his vicinity.

Bill Canaday, Box 455, De Bary, Florida, is another permanent resident in the South who would be delighted to see any of you. His chief occupation is flowers and fruit trees and he describes his garden as a very attractive place. His only complaint is that there are not enough hours in the day.

Harold D. Mitchell, X, V.P. of Potter & Dugan, Inc., recently made the press in correspondence with the Buffalo Ornithological Society. The starlings are driving them crazy and Harold suggested a buckshot treatment which did not meet with general approval. — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston 8, Mass. LESTER M. WHITE, *Assistant Secretary*, 4520 Lewiston Road, Niagara Falls, N. Y.

## • 1914 •

Extra, Extra! Dinney Chatfield becomes father for first time! Deborah Mary was born to Mr. and Mrs. Charles H. Chatfield on September 28 at Hartford, Con-



necticut. It will be recalled that, following the death of his first wife several years ago, Dinney remarried in May of last year. Dinney for many years has been Secretary of the United Aircraft Corporation at East Hartford. Congratulations to mother and dad.

Ralph Perry, whose plant is in Torrington, Connecticut, in the Naugatuck Valley area that was heavily damaged by hurricane Diane, writes that his plant fortunately escaped flood damage, although operations had to be suspended for one week because of power outage. His house did not fare so well, however, as four feet of water seeped into his cellar, but Ralph says his damage was negligible compared with that of numbers of his fellow townsmen whose houses just floated away.

Johnny Leathers dropped in to see your secretary recently and told of his trip to England last year to participate in the Veteran Motor Car Meet. Leathers for several years has been a manufacturer's representative for a die casting firm.

Friends of George Perley will be sorry to hear that he has been hospitalized for two operations, but at last reports he was coming along in fine shape.

The Alumni Fund is again under way. The expansion of the Institute is placing a heavy drain on its free funds, so that your generous contribution is earnestly solicited. The Alumni Fund helps provide those extra curricular needs which in the past have largely been provided by the Alumni. In addition, all contributions made this year will be counted as part of our Fifty Year gift. Many of us will be retiring soon, and it will then be less easy to make generous contributions to the Fifty Year Fund. Thus, do it today! — H. B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. H. A. AFFEL, *Assistant Secretary*, 120 Woodland Avenue, Summit, New Jersey.

## • 1915 •

A little early, but nevertheless a sincere holiday greeting with friendly wishes for good health and good cheer in 1956.

Our good friend and classmate, Abe Hamburg, has been seriously ill in the hospital here but it's good news to report that he is recuperating successfully at his home, 220 South Street, Brookline 46, Mass., and I know your notes and cards would cheer him.

Committeemen's letters before the Reunion still are interesting, particularly these reports from the Area Key Men. Doug McMurtrie reported: "Dana A. Stanley, R.F.D. 2, Uxbridge, Mass. (new address); Nelson W. Turner, Sanbornville, N. H., retired and is busy farming; Henry Dowst, Short Falls, N. H., works in Concord for the N. H. Fish & Game Commission. He has been in poor health; Arnold P. Homan, Chester, N. H., was in poor health; "Boots" Malone, Sugar Bush Farm, Chester, Vermont is retired, alert and lively and busy with his farm; Dr. William E. Brown, South Burlington, Vermont, MIT doesn't know he is a doctor. He went to Lafayette College, then MIT Course 7, then Harvard Medical School. Just retiring as Dean of Medical School, University of Vermont. He has four Reunions at once."

Loot Chairman, Ben Neal (and what a guy!) "It won't be long now until the big show goes on the road! I will be glad to cover all the actors whom you mentioned, and get them to get their make-up on. As a matter of fact, I have been in touch with most of them already, for a quick run-down. Bond, Easter, Bill McEwen and I attended a meeting of the M.I.T. Club of Buffalo, at the Cornell Aeronautical Labs one night last week. Bond and McEwen are confident of being there, and Bond, who is a close friend of Stone's, advised that Stone is building or taking over a house down at Barnstable on the Cape, and he is also looking forward to being there. George Easter is a little bit on the fence because of school graduation but I think he will be with us. Ed Walker had a rather serious heart attack last year, but from which I think he is pretty well recovered as he is in Florida at present, and will be due for some intensive work when he gets back. Ben Lapp wasn't at the meeting the other night, but perhaps can be persuaded. I talk with Burnham Field from time to time, in fact tried to get him to go down to that New York meeting, and at that time he gave me the impression that he was expecting to attend our Reunion. Percy Savage is in tough shape. For many years, as you may know, he was Superintendent of the Memorial Hospital at Niagara Falls, and a year or more ago ran into something which has pretty much incapacitated him since. It is doubtful that he will be at the Reunion but I'll be in touch with him again soon. Walsh and Codwise I do not know, but I'll get in touch with them at an early opportunity."

In the Program of the Carbon Conference, sponsored by the University of Buffalo, June 10, George Easter was listed as presiding at one of the technical paper sessions. George is Director of Research at Electro Refractories and Abrasives Corp., Buffalo, N. Y. Ben Lapp's son, Marshall, graduated from Cornell in June in Engineering Physics. He was awarded a Guggenheim Fellowship at California Institute of Technology to study Jet Propulsion. There are only 14 such awards made yearly in our country so naturally Ben is rightfully proud of his son's high achievement.

Alice Chellman retains her sense of humor with this clip from a Washington, D. C. paper, but it hardly applies to us in 1915 at our recent Fortieth: "The remarkable thing about college reunions is that your classmates have gotten so stout and bald they hardly recognize you."

On November 4 at the M.I.T. Faculty Club, Cambridge we shall have a Post-Reunion Class Dinner to show colored slides of the Reunion and Alumni Day. Wally Pike, Carl Dunn and Parry Keller have contributed pictures which no doubt will be added to by those attending and which I shall show with my new projector — the swell gift from all my classmates. I am gradually learning to take pictures and already have some rather good shots. Parry wrote: "Yesterday I mailed to you by parcel post a package of Kodachrome slides. These are the pictures which I took at the Reunion. Try them out on your new projector. I hope you will find a few

which can be added to the class collection. Our Fortieth Reunion was, in my opinion, very successful and enjoyable. I had a wonderful time and was happy that I was able to make it. The affair was very well organized and managed in all respects and I know that it was a lot of hard work and time on the part of yourself and a very loyal and devoted committee. My hat is off to you and all the others who made things go so well. I have been very busy at Goodyear since returning from the Reunion in June. We have had almost a record-breaking hot summer here and judging from the way October is starting, it promises to be a delightful month. I still have a week of vacation left which I will take next week roaming about northern Ohio and up in the lakes region of Michigan. I did escape some of the August heat in Ohio by a two-weeks business trip to California. I know you and Frances will like your new home and I will certainly come around and look you over when I am in the East next. I am gradually making the grade with my two grandchildren and am getting a big kick out of continuing in making the try. I received the very lovely M.I.T. 1915 Fortieth Reunion Bowl from Jac Sindler. It is certainly a very nice reminder of a very happy occasion and a swell bunch of guys. My best to Fran."

Correspondence with Sol Schneider in Havertown, Penna., shows he is enjoying his retirement travelling and visiting. It was good to see him at our Reunion and he wrote that he had a wonderful time. Alfred V. Coleman was recently elected a director of Lynn (Mass.) Gas & Electric Company. He is vice-president of the New England Electric System and a director of several Massachusetts Utility Companies. Congratulations to him!

Clive Lacy again heads the "Special Gifts" Committee for our Class on the Alumni Fund. He and Max Woythaler, Class Agent, make an energetic team working together on the Fund and have established some outstanding records with the splendid contributions they have collected. You'll be hearing from these two. A long-time-no-see man at our Reunion was Ralph E. Curtis, President Curtis Universal Joint Co., Inc., Springfield, Mass. It was good to have Ralph with us again. He writes: "I am enclosing a letter for your files which tells about four of the Chinese members of our class. I had been inquiring through Prof. Chun Hung Chiang at the National Taiwan University in Formosa. You may know Ta-Kang Kao who took Mechanical Engineering and who is now in Formosa, along with T. C. Mar. I thought our Fortieth Reunion photo was an excellent picture." Then attached to Ralph's letter given above was a report as follows: "Mr. Tsun Chang taught chemistry in some college in Peiping. He always lived in North China. Whether he remained in Peiping throughout the eight years of the Sino-Japanese War and where he is now, are not known. He is not in Formosa. Mr. Chou-Chuan Tseng first took up teaching Electrical Engineering in Hunan University in Changsha, Hunan — his native province. Later he was engaged as an engineer by the Mentoukou Electric Power & Light Co. located outside Peip-

ing, successively in charge of installation and as Superintendent. After a few years he resigned his position and returned to Hunan Province and devoted his time entirely to Christian church work. He later was ordained a Christian Minister. He remained in Hunan after the Central Government's evacuation from mainland China in 1949 when the Communists occupied that province. It was reported that sometime in 1950-51 Mr. Tseng after intolerable persecution in the hands of the Communists committed suicide. Mr. Von-Fong Lam '16 went into Engineering business when he first returned from Boston. After a few years he joined the Kiangnan Dock & Shipbuilding Works at Shanghai. Later he became head of the Harbour Administration at Wuchow, Kwangsi Province. At the end of the Sino-Japanese War he helped to rehabilitate a large machine manufacturing works in Canton, to which he was later appointed General Manager. As far as is known here, he remained on the mainland after its occupation by Communists. Anyway, he is not in Formosa. This information was supplied to me by Mr. Ta-Kang Kao, also of Class of 1915, Mechanical Engineering Course. I wonder if you know him. Mr. Kao was always engaged in Engineering business in Shanghai until the approach of the Communists to that city in the Spring of 1949 when he and his family evacuated to Formosa. One other M.I.T. graduate of the Class of 1915 in Formosa is Vice-Admiral T. C. Mar, Naval Architecture Course. He was at one time director of the Kiangnan Dock & Engineering Works at Shanghai. There is an M.I.T. Alumni Club in Taipeh with fifty-odd members including several Americans." Ralph added that Chang and he had adjoining rooms on St. Botolph Street; Tseng was his partner in Electrical Engineering Lab, and Lam was his roommate at Summer School. It's interesting to have such a detailed report of these Classmates in distant China.

Ellis Tisdale, retired from the U. S. Department of Health Education and Welfare on September 1, after eight years of service. His first job in 1916 was that of assistant engineer with the West Virginia State Health Department. He remained with this department until 1938, rising to the post of chief engineer. He was commissioned in the Public Health Service in 1938, becoming the first sanitary engineer reserve officer. In 1941 he became engineer member of the small faculty of health officials which conducted monthly orientation courses at Wilson Hall, National Institute of Health, at Bethesda, Md., training over 1000 new Public Health Service officers during World War II. Later he served with the War Manpower Commission and was a member of a committee planning for joint field operations of the Public Health Service and the American National Red Cross in times of disaster. On his retirement he will take a position as director of the Interstate Commission on the Potomac River Basin, Washington. Congratulations to Ellis and a happy retirement!

Leo B. Miller died May 21, 1955 in Milwaukee. It seems only a very short

time ago we published in the Notes a long and friendly letter he had written Frank Scully. Our sympathies go out to his family.

So, your letters about yourselves will keep our column in business and will "help Azel." — AZEL W. MACK, *Secretary*, 100 Memorial Drive, Cambridge 42, Mass.

## • 1916 •

The big item of news this month is the scheduling of a meeting of the Executive Committee of the Class in New York City on the afternoon of December 8th, Thursday, at the Hotel Chatham, and in the evening a Class Dinner at the Hotel Chatham for the members in the Greater New York area. The purpose of the Executive Committee meeting is to set up the organization and plans for the 40th Reunion next year. The purpose of the Class Dinner is to develop interest and enthusiasm for our 40th Reunion. The price of the dinner including the tip will be \$4.50. All drinks will be paid for individually. Dinner will be served at 7 P.M. However, the men are encouraged to gather beginning at 6 P.M. so that there will be ample time for conviviality. We would like to have classmates outside of the New York area who can make it to join with us. As a matter of fact, if there are any who are planning to go to New York City around that time, why don't you plan your trip so that it will tie in with our class dinner. We're hoping that Jimmie Evans will favor us with his good humor and driving class spirit by being the toastmaster at our dinner. We're hoping to see many of you that night.

In our mail, we received this interesting letter from Bill Drummey: "My life is sort of a prosaic thing and all I seem to do is to work fairly hard because I am glad to say we are busy; that makes me a very dull fellow. I am officially an old man in two respects in that I have three grandchildren (W.W.D.II, of course, is the most wonderful child that ever existed) and the Air Force has officially declared it, in that I am a compulsory retired Colonel. Last year I took a quick run over to England (flew over — highly uncomfortable) and came back on the S. S. *United States* (equally comfortable) and I project for myself next winter, a trip to South America to get some sunshine on my old bones, not having had any vacation to amount to anything for three years. I seem to spend a good deal of time behind the wheels of a car, because we have an Incinerator in Fall River, a hospital in Worcester and a Junior High in Haverhill, all of which radiate out from the City, besides other work, and so far, have escaped the demerits that I probably am entitled to — only have been lucky. I seem to enjoy pretty good general health commensurate with probably my special diet, which consists of avoiding all greens and eating plenty of red meat and drinking good whisky. However, the Veterans Administration, where I am a duly accredited disabled veteran, has checked me recently and made the comment that my 'lungs are too big.' This, I find mildly amusing.

Harry Lavine writes: "After 14 years with the Du Pont Co. in research and production, the last connection with them in Buffalo making rayon, I settled down in Boston and joined the Equitable Life Insurance Society. I became manager in '32 and have since been happily associated with this fine organization. My son, Morton L. 'Sonny' Lavine, graduated from the Wharton School of Commerce and Finance in Pennsylvania June, 1939 and we lost him June 29, 1944 in World War II.

"My daughter, (Mrs.) Roberta L. Davis, graduated from Wisconsin University in 1945 and Pratt Institute in 1947 and married December, 1948. She is the mother of a four-year-old daughter, a one-year-old son and expects to present us with the third grandchild early in April, 1956. They live in Westbury, Long Island. In the past few years I have become active as a minor officer on the Board of Congregation Mishkan Tefila and in the Brotherhood. I am a member of the Tech Stein Club and the Boston Life Underwriters Association."

Emory Kemp pleased us with this letter: "As you all know my wife and I came to Wellfleet now some nine years ago to live the year round and we have never regretted our sojourn to Cape Cod. The season here for business is very short, at the most, ten weeks, so to compensate for this I connected with Bethlehem Shipbuilding Co. in the engineering department from 1951 to 1953 and then due to the necessity of living in Quincy all week and only being on the Cape weekends I decided to retire and be here all the time. In 1954, I discovered the U. S. Army was looking for an engineer to act as assistant to the Post Commander at Camp Wellfleet. This set-up was just perfect for me and after going through all the civil service requirements made the connection, and for the last six months have been Engineering Aide here and have all my evenings and weekends free here at Wellfleet. One of the greatest surprises since living here has been to meet so many MIT men retired and living down here. There must be over a hundred on the Cape and I think we should form a Cape Cod MIT Club and meet around the Cape once every month or two. I am looking forward to our 40th Reunion and would like to suggest I bring the Class Baby (Malcolm D. Kemp), now 42 years of age to the reunion for the Saturday night dinner. Maybe this would bring out some classmates who otherwise might not come. Let's all get together and have the biggest reunion ever! You know life is pretty short and we only live once. P.S. Forgot to mention — 10 grandchildren to date!" Thanks for the plug for attendance at the reunion, Emory. We would like to remind everyone that the 40th Reunion is going to be celebrated at the Oyster Harbors Club on the weekend of June 8, 9, and 10, 1956. The Oyster Harbors Club is located in Osterville (Cape Cod), Mass. Make your plans now so that you can be with us.

Here's a brief note from Dick Hunne-man: "After that Route 128 rumpus it is a little risky to print my doings or sayings, but one of my interests is the Boston MIT Luncheon Club at the Old Oyster



House on third Thursdays, and I can heartily recommend it for interest and association." A good plug for the Luncheon Club and we hope that some of our classmates will take advantage of your suggestion, Dick.

And this one from James Hobbs: "this is the 15th year of my record, radio, phonograph, TV store near Coolidge Corner, Brookline, Mass., where we operate under the name of Beecher Hobbs and feature Fisher, Magnavox and Telefunken. How's that for a plug!" A good one Jim, and one which may draw members of the class to your location, maybe not for sales, but for exchanging stories of the "good, old days." Hope we see you at the reunion next June.

Our assistant Secretary has been active lately and offers this report for the interest of our classmates: "My quality assurance work at Bell Laboratories gives me occasion to do some traveling around the country. A little over a month ago I spent some time on a guided missile subject at Redstone Arsenal at Huntsville, Alabama, the so-called 'Rocket City.' En route by air (but not in air) I made attempts to reach members of the class, including a l.d. call to Dina Coleman in a stopover at Louisville. Dina was about to return from lunch, and I have since had word that he will call back when he gets up this way. I have just returned from a 10-day trip with stops at Santa Monica, Albuquerque and Cleveland. My wife accompanied me on this trip—her first west of the Mississippi and her first in the air. As a matter of fact, my sister, an MIT wife (of Carl J. Sittinger, VI '10), of Winchester, joined us, for we were to do two things that she had always hoped to do, namely, to visit California and the Grand Canyon. We took one of American's de luxe non-stop flights to Los Angeles by DC-7, and can proclaim that American certainly has a great deal of quality to boast about in its services. It was one of those perfect flights with hardly a bump, clear visibility, and only a few fleecy clouds from start to finish. Lunch included shrimp (and other) cocktails, rock Cornish guinea hen and wild rice, plus etc. and etc., so you can see that we were well taken care of. A three-day stop at Hotel Miramar at Santa Monica gave us the feeling of living the life of vice presidents, for this is where we understand V.P. Nixon is wont to stay. (I worked while the others toured L.A. and Hollywood.) Leaving L.A. and traveling east by Santa Fe Railroad with a switch at Williams, Arizona, we had a full day at the Grand Canyon under a clear blue sky that brought out all the colors that books and tourists tell about. The next three days were spent on business at Albuquerque while the girls toured Old Albuquerque, Santa Fe and all the rest. Schedules were somewhat tight, and we flew all night (mit stops) to Denver to Chicago to Cleveland, where I had to give a talk on Sampling at the Engineers Club—a local meeting of the American Society for Quality Control and the American Statistical Association. This trip included four hours waiting in the Denver airport from 10:30 pm. to 2:30 am.—not what one would call a desirable occupation. When I reached

home I found your letter giving plans for the meeting of the Executive Committee and a dinner in December, all looking toward a bumper 40th Reunion next year in the Bay State."

In closing the column, we would like to thank those who wrote for their prompt response to our plea for news at a time when we were high and dry. Also, we encourage all who can to try to make the dinner at the Chatham on Dec. 8th. Finally, a little plug for attendance at the 40th. If you've never been to one of our reunions or haven't been for a long while, make it a date for this one. You'll have a wonderful time and long remember it.—RALPH A. FLETCHER, *Secretary*, P.O. Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Labs, 463 West St., New York, N. Y.

## • 1917 •

The response to birthday letters has been generous and satisfying. We think, however, that Neal Tourtellotte's reply in red ink on our note to him is entirely justified and he is formally and officially forgiven and excused. His note reads, "I think that I have been in the Class Notes enuf lately. I'll take a whirl next birthday." On the day it arrived in Cambridge your secretary was in New York and missed by some thirty minutes the trail of Gus Farnsworth who had left on an airplane for the Northwest. His official destination according to American Airlines was Portland, but we certainly hope that he planned to see the Tourtellottes there. Possibly we may get a word from one or the other in later notes.

We are saddened to learn that C. Wesson Hawes passed away on September 22nd.

Bob (Claudius Henry Martin Roberts) and Lida (Mrs. Claudius Henry Martin Roberts) stopped in Boston on their way back to California from Japan by way of a tour of India, Pakistan, the Middle East and Europe. He retired from his colonelcy in the Army in Japan, and now still a young man, is seeking new worlds to conquer. (Wolfeboro and Cape Cod papers please copy.) His son and daughter were both currently in New Hampshire. His spare time in the coming years will be spent in splicing and editing his thousands of feet of movie film.

Bill Hunter writes: "I live in Plainfield, New Jersey, a town that my wife, Doris, and I enjoy very much. My son, David, is at home now after serving a hitch in the Army including one year in Korea. After his return he had no desire to return to college so is now learning the retail store business. My daughter, Jean, teaches music at Riverdale Country School for Girls in New York and is organist and choir director at a church in Clark Township, New Jersey, so we see her on weekends only. Each summer she goes to Martha's Vineyard as an Assistant Director of the Vineyard Sailing Camp. As a result of her job at the Vineyard, we have all acquired the habit of spending our vacations there and think it an ideal spot. My work is most interesting. Although I graduated as a chemical engineer, my job has forced me to become an electrical engineer of sorts. I have been

with the Diehl Manufacturing Co. of Somerville, N. J. for the past fifteen years. This company is the Electrical Division of The Singer Manufacturing Co. and manufactures a great variety of electrical rotating apparatus and appliances. I am responsible for sales of such special apparatus as servo motors, tachometer-generators and resolvers and, while most of the product still goes to the Armed Services, we are sure that all the recent publicity about Automatic Control is eventually going to widen our industrial market. In the meantime, I travel a lot and meet a lot of smart young engineers who keep me hustling and incidentally keep me from getting too self-satisfied. I'm still thankful I went to M.I.T. and believe it's greater now than ever."

From George Henderson: "I retired from the Navy several years ago and have not been engaged in any gainful occupation since. For years I looked forward to a life of leisure and I must add that I am enjoying it. Golf, putting around the home and garden, with a little travel now and then, seem to take up most of my time. My oldest son is a Naval aviation pilot at present stationed in Patuxent River, Md. with his wife and three children, so with grandchildren only 70 miles from our door my wife and I will hang out in Arlington, Va. a while longer. On my way back from a western trip last summer I went by way of Marion, Indiana, and called on Frank Butterworth. Frank was in fine health and working hard in his own business. Another seventeen-year-old I saw recently is Tom Meloy, of "Melpar." I telephoned to Gerald Thomson last June when I was in New England and hope to get in touch with him again this fall. Our fortieth reunion is not too far away, and I shall hope to see you then."

John Parsons: "This is my second year in the consulting profession, having left the Hollingsworth and Whitney Company before it was absorbed by the Scott Paper Company. Last year three of us (wife, son Don, and self) found time to travel nearly 10,000 miles in 31 days by auto from Maine to the West Coast, northwestern U.S., and the photogenic Crater Lake National Park in Oregon and the Jasper and Banff National Parks in the Canadian Rockies. The color was captured in Kodachrome. Now we can make this trip in one evening. Yes, photography is one of our hobbies. Time out was also taken to write a couple of chapters on sulfite pulp manufacture and pulp bleaching for a forthcoming book on pulp and papermaking to be published in 1956. My interest in the Boy Scout program continues as Commissioner of the Pine Tree Council; besides I am a Rotarian of nearly ten years without a miss."

"Schoonie" Schoonmaker writes: "I am still teaching Electrical Engineering at the University of Florida. Our enrollment has greatly increased and we will have 100 seniors next year in Electrical Engineering. I have been elected Secretary-Treasurer of the Southeastern Section, American Association of Engineering Education, and am Student Advisor for the college chapter of American Institute of Electrical Engineering. My four children are scattered. My oldest is a lumber con-

tractor in Northern California. My elder daughter is married, has a daughter, and lives in Fort Worth, Texas. My younger daughter is with the Red Cross in Japan. My younger son is married, a student here at the University, and he has a son. I have a comfortable house, and like my work, and will probably remain in Florida. I shall certainly be on hand for the 40th."

John Harper says, "I am in the oil business—a distributor of gasolines and light fuel oils in Greater New York City. Twenty years ago I was married to Mary Frances Clark and we live in Towners, New York for most of the year. During the winter months we move into the city. I have been interested in Petroleum Industry activities and am a member of the National Petroleum Council and the Board of Directors of the American Petroleum Institute. On June 4th, I attained an age probably comparable to most of my classmates, but it does not seem a bit senile."

Ras Senter: "By this time I had planned to take things a little easier. However, I have found that when you have worked hard to acquire certain interests and holdings, then you have assumed definite responsibilities and often have to work much harder to hold on to them and keep them going. Am still President and General Manager of Dallas Petroleum Company and E. G. Senter & Company, both small Texas corporations of Dallas, Tex. The Dallas Petroleum Company is not doing any drilling and development at this time but owns and retains certain producing mineral interests and is always in the market for good deals. E. G. Senter & Company is a real estate holding and development company and owns considerable real estate, some of which has been developed for suburban subdivisions. Recently we have acquired some rather large acreage holdings between Dallas and Fort Worth, which will be available for subdivision soon. In the meantime we are having some fun trying to farm it. Personally, I am still single and am very fortunate in having the families of my two sisters and a brother near, who together with a host of friends fill all social needs. Also play weekend golf at the Country Club and otherwise manage to keep very busy. Among my greatest pleasures are occasional visits from M.I.T. classmates and friends passing this way, including Lobby, Penn Brooks, Walter Gale and others, and their lovely wives. Only wish more would come."

And from Ken Lane: "This is in reply to your reminder that, like Mr. Benny, I will shortly attain once more the age of thirty-nine. Inasmuch as this is my first annual report, I am including a resume which will bring the record up to date. As you are no doubt aware, my operations since graduation have been pretty well confined to the field of aviation. For the first fifteen years my work was strictly engineering, including the design of one or two planes which turned out to be reasonably good flying machines. Then, in connection with my consulting work, I became involved as an expert witness and technical advisor to trial counsel in various types of litigation, including some patent litigation. Gradually, without my being fully conscious of it, my work be-

came almost entirely concerned with patents, trade marks and copyrights. Since 1938 I have been on the payroll of Curtiss-Wright Corporation and for the past eighteen months have been in charge of patent, trade mark and copyright operations of the corporation. By reason of the corporation's recent policy of diversification, I have had to renew my nodding acquaintance with physics and organic chemistry. Fortunately, the Division patent attorneys are better versed in these fields and can explain to me their mysteries. As to family, I have the same wife I started with, two sons, two daughters-in-law, one grandson and two grand-daughters. The older boy with the grandchildren is located in Miami, Florida, and the younger (M.I.T.'50) works in the Engineering Department of our Wright Aeronautical Division and lives with us. The other daughter-in-law, the wife of the son who was shot down over Japan, is doing research at the Jackson Memorial Laboratory at Bar Harbor, Maine. I have a number of forms of recreation, no one of which is sufficiently obsessive to qualify as a hobby. Much of my excess energy is expended in a game resembling tennis but not recognizable as such by either Seixas or Trabert—as Art Knight would testify if called as a witness. A portion of my vacation time is devoted to cutting firewood on our place in Madison, New Hampshire, and peppering the hillside in the process of sighting-in rifles for the fall hunting. As a matter of fact, I burn most of my ammunition in practice—all deer seem to migrate to Canada the instant I cross the Maine border. My basement contains the usual complement of power tools, with which I make fixtures and attachments for use in connection with said tools and, infrequently, something useful or decorative for the household. This, I understand, is standard operating procedure for basement artisans. Of late my contacts with other '17ers have been few and far between. During the brief intervals between his cruises, Dix Proctor calls me at the plant to sell us a few more machine tools and we occasionally get together for a brief chat. Before he reverted to his boyhood pastime of taking clocks apart to see what made them tick, Alan Sullivan's attendance at New Jersey Alumni meetings resulted in a series of informal class reunions. Now, the only reliables left are Win McNeill and Ray Brooks."—RAYMOND STEVENS, 30 Memorial Drive, Cambridge, Mass. W. I. McNEILL, *Assistant Secretary*, 270 Park Avenue, New York City.

## • 1918 •

Courtesy of the ever alert Pete Sanger, we have a report that one Frances M. Upshur became the bride of John Peter Craighead in New York City last September 3d. The groom, as you already suspect, is a son of our own Phillips Brooks Craighead of Milwaukee. According to the New York *Herald Tribune* the bride received a bachelor's degree, cum laude, from Smith College in 1953. The groom served in the Navy after finishing Lawrenceville Academy, and was graduated by the University of Michigan in 1950. The couple will live in New York City.

Contrary to usual custom, this item will conclude with attention to the father of the groom. When I last saw him I asked Pete how that nickname was derived from the Alan Bridgman Sanger which appears on his birth certificate. The answer was that on first seeing her baby brother big sister exclaimed, "Oh you dear little Peter Rabbit." Ah, the treachery of sisters on poor and hapless baby brothers.

Some similar treachery, doubtless my own, has mislaid the notes I made when Nat Krass was here last August. To the best of my memory he was talking about the hazardous delight of his trip to Istanbul. Having some free hours, and after an MIT education, he was naturally of an investigating turn of mind, so he took a trolley to the bitter end of the line. (Please be advised that "bitter end" is an expression stemming from the bits to which the ultimate end of an anchor chain is attached. It does not stem from any unpleasant experience.) Alighting, while the shadows were still short, he set out on foot for further observation of the Turkish way of life. Coming to an elegant estate overlooking the Bosphorus, he followed Lady Macbeth's admonition about courage, and knocked at the front door. Following a long and palpitating wait a man appeared at the door. Ascertaining that English was understood, Nat explained he was an American tourist moved by the enthusiasm of discovery to see how life was graciously lived thereabouts, and would it strain the bounds of courtesy to ask whether he could be given a modest guided tour of the palace—for such it obviously was. Indeed he could. As they went about, the two men soon peeled off the wrappings of formality and over a demi-tasse of coffee, and the following strangely diverting story came out. The gentleman who came to the door was the master of the house, himself an American by birth, who had been deposited in Turkey by fate to meet and to marry a daughter of old Sultan Abdul-Hamid who, gentle reader, used to haunt your childhood dreams as the black terror of Europe. The house was the Sultan's summer palace. If these details are faulty in some spot, may Nat forgive me. Being old and full of sin my memory is increasingly untrustworthy. But surely the essential story is correct.—F. ALEXANDER MAGOUN, *Secretary*, Jaffery, N. H.

## • 1919 •

Thanks to those still sending news for this column.

We were certainly pleased to hear from Miss Edith Clarke, who is a professor of electrical engineering at the University of Texas. She tells us that she received the 1954 award of The Society of Women Engineers. This is a great honor and one that all 1919ers can feel proud of.

We had word from Harry Cikens who is still keeping busy with his work as Life Insurance Consultant. He writes, "It is an extremely interesting field dealing with the family problems of every day life. I have three sons, one married, but still no grandchildren. Two of my sons have their Masters degree from Harvard and are now trying for their Ph.D's in Political Economy."



F. S. Adams writes that he is now in the finishing stage of construction of a 10-unit 1,500,000 K. W. steam power plant for T.V.A. He has been assistant construction engineer for the past 4½ years.

Bernard S. Coleman writes that he expects to become a grandfather (second offense) early in November. He's also going to have his hands full with the Chairmanship of In-Plant Federations Committee of the Los Angeles Community Chest.

Larry Cahill dropped us a line to say that he's self-employed now in the shoe business in Cincinnati, Ohio. His address is 8241 Woodbine Avenue, Hartwell, Cincinnati 16, Ohio.

It was with deep regret that we learned of the passing of Philip Brown on June 17 of this year in Santa Cruz, Calif.

Your secretary had lunch with Chuck Drew in St. Paul the first week in September. Chuck is with Douglas Kennedy Company in Minneapolis, Minn. and sent his best to everyone.

On one of your secretary's trips he bumped into Jake Lichter at the Pittsburgh airport. Jake is still in Cincinnati and President of Southern Fireproofing Co.

The Golf and Dinner Outing of the Westchester M.I.T. Club was held on June 21st at the Scarsdale Golf Club and was chairmanned by your secretary. About 120 were present and a dinner talk on A.E.C. by Dr. Menke was well received. — E. R. SMOLEY, *Secretary*, The Lumus Company, 385 Madison Ave., New York, N. Y.

## • 1921 •

Sincere greetings and a very hearty welcome to the 1921 news circle in this belated start of the thirty-fifth year of monthly meetings in these columns of the Review. Pull up a chair and let's get going on the big events of the last several months and the bigger ones to come in this year of our thirty-fifth reunion. When you have finished this combined November and December chapter, won't you please send us *your* news so that everyone can be adequately recorded before we all meet next June in Pine Orchard, Conn., and in Boston.

Alumni Day last June saw a happy group of 44 members of the Class, wives and guests enjoying the annual trek to Tech and the renowned good fellowship of our yearly Class party. Ted Steffian and Chick Kurth did an outstanding job in setting up a most enjoyable show at our big reception room at the Hotel Statler and provided plenty of good cheer along with the ever interesting movie and picture record which Bob Miller has built up for us over the years since 1921. Rigi and Saul Silverstein have for many years been gracious hosts. Helen St. Laurent and Ray, our Class President, welcomed the entire group and expressed the regrets of some of the regular attenders—including Graciela and Helier Rodriguez, Bob Miller, Bill Sherry and your Secretary—who were unable to be present. Ray and Mich Bawden were members of the Alumni Day Committee. Ted Steffian sent a complete report of the activities in detail, including the original signed copy of the warm, and

much appreciated, greetings which were telegraphed to us in Glen Ridge. Chick Kurth garnered signatures and messages from the several 1921 tables at the annual Technology banquet and Ray furnished additional information and copies of letters from some who couldn't attend. Many thanks go to all who helped to make the day such a tremendous success. Among those attending the various events were: Mich Bawden, Josh Crosby, Ed and Mrs. Delany, Chick Dube, Fritz and Mrs. Ferdinand, Harry and Mrs. Goodman, Bob Haskel, Roy and Mrs. Hersum and daughter, Cynthia, Norm and Mrs. Hunter, Mel Jenney, Andy Jensen, Algot Johnson, Chick Kurth, Ted McArn, Ed and Mrs. McDonald, Charlie MacKinnon, Leo and Mrs. Mann, George Owens, Herb and Mrs. Reinhard, Harry Rosenfield, Fred Rowell, Ray and Mrs. St. Laurent, Steve Seamos, Saul and Mrs. Silverstein, Ted Steffian, George Thomson, Art Turner, Walt Vitalini, Bill Wald, Mrs. Edward (Frances Howell) Warren, Frank and Mrs. Whelan, Ed Wylde.

High praise has poured in from all sides regarding the Institute's first Alumni Officers' Conference on the Cambridge campus early last September. Some 500 alumni and staff officers met for two days to cover the many fields of activities of the alumni clubs, the classes and the Educational Council. Among those present from 1921 were: Wally Adams, George Chutter, Josh Crosby, Irv Jakobson, Chick Kurth, George Owens, Helier Rodriguez, Ace Rood, Ray St. Laurent and George Welch. Everyone in the Class shares the honor which was paid to the Class of 1921. We are grateful to Dwight Arnold'27, George Chutter, Stew Coey'06, Obie Denison'11, Bev Dudley'38, Irv Jakobson, Ray St. Laurent, Don Severance '38 and Dale Spoor'22 for their friendly messages of appreciation. Chick Kurth sent a list of those in attendance at the last Alumni Association meeting, including Mich Bawden, Ed Delany, Fritz Ferdinand, Norm Ferguson, Bob Haskel and his guest, Dave Crocker'57, Joe Kaufman, Chick Kurth, Win Luke, Ed McDonald, Phil Nelles, Herb Reinhard, George Schnitzler, Steve Seamos and Harold Stose. Chick mailed the data enroute from his Cambridge home to visit his daughter, Anita, and her family in Tulare, Calif.

The big thirty-fifth reunion that is right around the corner, is in the capable hands of Reunion Chairman Mel Jenney and his stalwart committee. You have already received the first mailing and know that we will gather at the beautifully located and superbly equipped Sheldon House on Long Island Sound in Pine Orchard, Conn., on June 8, 9, and 10, 1956, and then go to Cambridge and Boston for our usual Class party on Alumni Day, June 11. There will be additional mailings direct to you and, if possible, more reunion information in these columns in every monthly issue from now to June. The questionnaire will make it easy for you to bring your news up to date for the Class records. Please return yours now. If you have never attended a reunion, come to this one and start now to share in the sheer fun and enjoyment of living with the boys once

more. If you have joined in the good times before, you know what a pleasure and satisfaction it is to be with old buddies. Time seems to pass faster every year and we must all make use of every remaining opportunity we have to see each other before it is too late. Send in that form right away and say that you'll be there!

Received too late for inclusion in the July Review is a pleasant letter from Michael Treshow of Plainfield Road, Route #3, Hinsdale, Ill. Mike will be remembered as a Fellow in Course XIII who came to us after receiving his master's degree in Copenhagen, Denmark. Occupied for the last five years in atomic energy development and now the Senior Mechanical Engineer in the nuclear reactor division of the Argonne National Laboratory, he has had a varied career in development and research, mostly with cement manufacturers and particularly on heat exchangers, kilns, grinding and power equipment. He has been the general manager of the Monolith Portland Cement Company's plants, chief development engineer in charge of research and later the chief engineer of F. L. Smith and Company, as well as a consulting engineer on cement plants and equipment. He is a member of the American Society of Mechanical Engineers, the Scientific Research Society, the Institute of Chemical Engineers and a fellow of the Scandinavian Foundation.

Another fine letter came from Holland L. Robb, a retired colonel, Corps of Engineers, in answer to our plea for addresses. Writing from his home at 119 South 17th Street, La Crosse, Wis., Col. Robb says, in part: "According to the West Point Alumni Directory, Lemuel Pope's address is 1129 Laguna Ave., Burlingame, Calif. He was graduated from West Point in 1918 and was an Army student with us at M.I.T. He was honorably discharged in 1922 and has been active in civil engineering since then, recently as consulting engineer to Anonima Caminos of Venezuela. I have not seen him for about 30 years." Many thanks, Holland.

Activities of the Junior League of 1921 are numerous. Pat Lesser, 22-year-old Seattle University senior and daughter of Louis L. Lesser of Seattle, Wash., has been a top feature in the news for winning important golf honors in Chicago in July and then going on to realize the fondest dream of all women golfers by capturing the Women's National Amateur Golf crown at Charlotte, N. C. in August. At 17, Pat won junior and intercollegiate titles as well as the Western Amateur tournament. Sumner and Betty Hayward have announced the marriage of their daughter, Priscilla, to Harold Wieder of the University of Rochester on September 17 at Ridgewood, N. J. Priscilla was graduated from Swarthmore in 1953 and has been associated with the Educational Testing Service in Princeton, N. J. The Haywards made an extended summer trip to the West Coast, stopping at Yellowstone and other national parks. Bob and Mrs. Haskel announced the marriage of their daughter, Roberta, to David Crocker'57 on June 18 at Needham, Mass. Daniel Wyer Jackson, son of Dug and

Betty Jackson, married Doris Maier on October 1 at Gloversville, N. Y. Dan is with General Electric in Schenectady. From the Second Generation at M.I.T. Club comes the news that Richard F. Jenney '52, son of Mel and Mrs. Jenney of Melrose, Mass., married Mary Potter of Melrose and Lasell Junior College on June 11 in Melrose, Mass. Dick is a graduate student at the Institute and a candidate for the doctor's degree. Congratulations to Tom and Mrs. Card of Fairhaven, Mass., and to Peter C. Card '57 on the latter's having achieved the Dean's List at Technology for the spring term of 1955.

Robert S. Cook has moved after many years in Canandaigua, N. Y., and says he is permanently settled in Ft. Lauderdale, Fla. Edward M. Eppridge of DuPont's rayon division, reports a new home address in Wilmington, Del. George F. Gokey heads the Gokey Industries in Jamestown, N. Y. Walter W. Kittredge says he now lives at 300 Fenn Road, Cheshire, Conn. Edward W. Noyes of the Chicago Pneumatic Tool Company, has moved to Brookhaven, RD #1, Mocanagua, Pa. G. Whittier Spaulding, formerly of Baltimore, is in Allentown, Pa. Charles W. Tucker is with the Indonesia Mission, care of U.S.O.M., Indonesia Djakarta, Department of State Mail Room, Washington 25, D. C. Charles A. Williams of the United Illuminating Company, lives in Guilford, Conn. David O. Woodbury has been down East at his home on Shore Road, Ogunquit, Me. New addresses have been received for L. Willis Bugbee, Jr., Andrew Deane, Commander Glenn H. Easton, Nellie Jefferson, John J. MacNeil, Leo Mann, Major William D. Morrison, Rollin F. Officer and Dr. Reginald H. Smithwick. We'll gladly furnish them on request.

One of the most dramatic presentations of the destruction and aftermath of Hurricane Diane is contained in Saul Silverstein's message in the *Rogers Reporter* of the Rogers Corporation, on "Operation Nightmare." Representative of the heartaches of so many in the East, the peaceful Quinebaug River invaded the new plant and offices in Rogers, Conn. It took nineteen hectic days to get back into some semblance of production. Fortunately, no lives were lost. Grimly funny aside: An office choral group in the midst of the mess and confusion, serenading Saul and presenting a cake on his own birthday and a coincidental 25th anniversary with Rogers. We heard similar evidences of American morale in the face of disaster from our own daughter, who was marooned in a camp on the Delaware. Saul, who is also secretary of the U.S. Council for International Progress in Management, was the principal speaker at a recent meeting of the foreign trade group of the Worcester, Mass., Chamber of Commerce. In his home town of Manchester, Conn., he was called upon to be the principal speaker at graduation exercises last June. Following the startling closed circuit TV broadcast of a Rogers wage bargaining contract negotiation session last year, the American Management Association has announced that it filmed the proceedings for use in making a newly-available visual training aid on collective bargaining in

action, called "You Are There at the Bargaining Table."

Joseph E. Conrad, Executive Secretary of the M.I.T. Club of New York, has invited the Class to stage dinners at the Club's new quarters. Watch for an announcement if you live in the metropolitan New York area. Newspapers throughout the country are running a series of twelve articles excerpted from David O. Woodbury's eleventh full-size book, *Atoms for Peace*, published by Dodd, Mead, and Company. An accompanying article in the Des Moines, Iowa, *Register* says of Dave: "An engineer, writer and traveler with a remarkable facility for telling an adventurous tale of science, he is the son of a famous artist and the descendent of a family of inventors. He has degrees from Harvard, Stanford and M.I.T. and served in the U.S. Navy. His articles have appeared in the *Saturday Evening Post* and in *Reader's Digest*. His hobbies include building boats and prospecting for uranium." Also lecturer, TV actor, radio and movie scenarist and president of Creative Research, Inc., Dave has another article in the October issue of the *Reader's Digest*, entitled "Dr. Geiger's Little Magic Box," a condensation of a story in the *Denver Post*. It and the new book are both worth reading. Dave's recent television appearance was on a science program relating to astronomy and his famous best-selling book, "The Glass Giant of Palomar."

Albert E. Bachman has also broken into print with an article in the May-June issue of the *Harvard Business Review*. The title, "Quiet, Please!" heralds a discussion of the noise problem with respect to worker productivity, community noise and product noise. From their home, Tetrastemma, Darlington Road, RFD 1, Havre de Grace, Md., Dug and Betty Jackson sent very cordial greetings to Maxine and your Secretary along with a most welcome series of pictures they made at the Course VI-A reunion at Rufe Shaw's home last spring. For Rufe, Paul Rutherford, George Chutter, Royal Wood, Larry Buckner, Ralph Gilbert '19 and Al Kidder '23, we'll bring them along next June. Munroe C. Hawes of Hawes and McAfee, Inc., Manasquan, N. J., real estate and insurance firm, wrote a personal note in which he says his son is now in the firm and his son-in-law handles the construction end of the business.

One of the high spots to which we look forward each year is the annual visit from Graciela and Helier Rodriguez. Ordinarily in June, it was deferred to September this year because our visitors took off from Havana on a European vacation and returned via the Alumni Officer's meetings in Cambridge. Flying first to New York in mid-July, they immediately headed for London and Zurich and travelled through Switzerland and northern Italy. Helier wrote, in part: "Last March, we made a short trip to Mexico to attend the yearly Fiesta of the M.I.T. Club of Mexico. It was indeed a real fiesta which we fully enjoyed, but the best of all the events was the meeting with two of our classmates I had not seen since we left the Institute - Viviano L. Valdés and Manuel Sandoval Vallarta. They and their wives

were very kind to us and entertained us at their homes. Last week I had a small gathering at home, a dinner party in honor of Professor Robert S. Harris '28, of the Food Technology Department, who is scientific director of the nutrition laboratory in Havana, over the directing committee of which I preside. The evening was most pleasant because, among the guests, were some M.I.T. alumni who, at the request of Dr. Harris, gathered around Graciela at the piano to sing Tech songs. It reminded us of pleasant gatherings at your home." Along the European route, Helier sent humorous notes on absorbing large quantities of ancient history and art. Following their Cambridge stop, they royally entertained Maxine and your Secretary in New York.

A. Warren Norton, Chairman of our 50-Year Gift Committee, wrote a note to Class President Ray St. Laurent in which he included data on his new book, "Norton's Guideforms for the First Reader," published by Guideform Publishers, Mamaroneck, N. Y. The voluminous work is a guide and reference for the First Reader and other students as an orderly approach to reading in a Christian Science Church. William J. Sherry, member of the Corporation of M.I.T., wrote Ray that he attended the dedication of the new chapel and auditorium in Cambridge last spring.

Jackson W. Kendall, Vice president of Bekins Van Lines, Los Angeles, Calif., sent regrets for not attending Alumni Day and added: "I will be unable to sit at our Class table. With hearings in San Francisco with the State public utility commission, then here with the ICC and back to San Francisco for another with the same body, it doesn't look like my year to be East. But come hell or high water, I'm going to do my best to make our reunion in 1956. Marge and I have had some nice trips recently, at Palm Springs at the California Moving and Storage convention, and Reno for the Western States Movers' Conference. We have recently incorporated a New Mexico Bekins Company and taken over an outfit in Albuquerque. We are also incorporating a Nevada Bekins Company and are taking over a company in Las Vegas. I had the pleasure of spending an evening with my grandson in Menlo Park on the way back from San Francisco and wish that Jack, Jr., and his family lived nearer to us. Bob is still getting along well at M.I.T. and expects his doctor's degree this fall. Our new home in Pasadena is coming along beautifully. Please extend our greetings to the Class of 1921."

Robert F. Miller also sent his apologies for not attending Alumni Day. His daughter, Betty, was graduated that day from Notre Dame Academy. Bob sent another batch of slides for showing at the Class party and certainly is deserving of sincere thanks from every one of us for his many years of faithful service in taking pictures every year and preserving them in a photographic history of the Class. Ernest Henderson and Robert L. Moore and their Sheraton Corporation of America chain of 30 hotels report the acquisition of the Astor in New York, the Blackstone in Chicago, the Palace in San Francisco and the Town House in Los



Angeles in a successful year which saw construction pushed on a 1000-room hostelry in Philadelphia and entrance into the motel field with projected luxury suburban highway inns at Binghamton and Tarrytown, N. Y.

Says "The Man About Town," in the Chelsea, Mass., *Independent*: "While on a visit to Baltimore, Md., I looked up an old schoolmate I haven't seen for 38 years, Asher Z. Cohen, who resides with his wife, Clara, at 4400 Forrest Park Avenue in Baltimore. He was graduated from Williams School in 1913, Chelsea High in 1917, from M.I.T. in 1921, became a chemical engineer and ran his own business in New York. In World War II, he was called from the reserves to serve in the regular Army and was promoted to colonel. He is now an industrial engineer for the government. Mr. and Mrs. Cohen have two married daughters and three grandchildren." Arthur L. Jackson has been promoted to be director of engineering for the American Enka Corporation of Enka, N. C. He has been associated with Enka since 1929 and has served in a number of capacities. Originally in charge of the drafting section, he subsequently spent several years in the research department and became chief engineer. In 1954, he was made assistant director of engineering.

H. Seymour Colton, who heads the Colton Chemical Company of Cleveland, Ohio, is the subject of an illustrated article in the Cleveland *Press*. Famous for his development of "Vinol," the trade name for an adhesive used as a raw material by glue and adhesive manufacturers and also in the production of textiles, paper and plywood, his other products include a foam plastic material, lighter than cork, used in flake form for refrigerator insulation and by greenhouse people to absorb water for plants or to wrap around bouquets and flower arrangements. Microscopic glass beads, called "microballoons," were developed to float on top of oil storage tanks to reduce loss by evaporation. Seymour was originally associated with DuPont. He acquired Cosma Laboratories in Cleveland and then started Colton Chemical in order to make the products developed by Cosma. Two sons attended M.I.T., Gary S. Colton '49, who is comptroller of Colton Chemical, and Evan T. Colton '55.

Andrew Deane, formerly assistant to the vice president of U.S. Steel Corporation's industrial engineering division, has been elected vice president in charge of materials for U.S. Steel Homes, Inc., with headquarters in the general offices in New Albany, Ind. A native of Quincy, Mass., he prepared for Technology at Thayer Academy and was graduated with us in Course XV. He has been with U.S. Steel since 1949, in industrial engineering phases of raw materials. He served for a year as consultant to the housing subsidiary. Prior to coming with U.S. Steel, he held several executive positions with industrial engineering and manufacturing firms in New York, Philadelphia, Chicago and the South. He is a member of the American Society of Industrial Engineers, the Edgeworth Club and the Montour Heights Country Club in suburban Pittsburgh. He is married and has two chil-

dren, a daughter, Stephanie, and a son, Andrew. The Deane family have been living at 501 Chestnut Road, Sewickley, Pa.

Roger H. Clapp of 59 Fox Street, West Springfield, Mass., died on August 25, 1955, in Springfield. Born in Dorchester, Mass., he prepared for the Institute in Boston schools and was associated with us in Course I. He was a mechanical engineer with Baldwin Locomotive Works in Philadelphia and became an inspector for the Chicago, Burlington and Quincy Railroad. He was later associated with the New York City subway system, retiring in 1941 and moving to Springfield, where he was with the Dixie Furnace Company. He is survived by his wife, Mrs. Kathryn Gebhard Clapp, and an aunt, Miss Ernestine Polles of Rockport, Mass., to whom sincerest sympathy is extended on behalf of the Class.

All of your Class officers and committee chairmen join in extending to you and yours a very Merry Christmas and a Happy New Year. — CAROLE A. CLARKE, *Secretary*, Federal Telephone and Radio Company, 100 Kingsland Road, Clifton, N. J.

## • 1923 •

The First Alumni Officers Conference got off to a good start September 9-10, with the following class members represented: Burchard, Frank, Bond, Johnson, Kattwinkel, Davenport, Elosua, Pearson, Redway, Rounds, Skinner and Zimmerman. According to reports, the sessions were highly instructive and the meeting was a great success. Undoubtedly more of us should try to go another year. Nathaniel H. Frank (XIV), Head of the Department of Physics, gave a paper on "Improvements in Undergraduate Laboratory Instruction" and John E. Burchard (IV) Dean of the School of Humanities and Social Studies, presented a thought-provoking talk on "Progress in Humanities at the Institute".

A telephone call from Pete Pratt (XV) reveals the information that his job with General Foods keeps him jumping around the country. After a three-weeks' trip to California, he was home for a few days and then took off for Columbia, S.C. On his next trip home to White Plains, he promises to have lunch with your scribe and relate the information he has picked up about several classmates while traveling around the country.

R. G. Rinchliffe (X-A) of Swarthmore, Pa., President of the Philadelphia Electric Co., has been named a Trustee of Drexel Institute of Technology. He is a graduate of Yale University and M.I.T. and joined Philadelphia Electric in 1923 as an engineering assistant. He has been president since 1952. He is a director of several banks and of Franklin Institute and the Edison Electric Institute, and also active in several professional and technical societies. Congratulations and good luck in your new venture.

The board of trustees of the New Bedford Institute of Textiles and Technology announced the appointment of Milton E. Parker (VII) as visiting professor of food engineering. Milton is professor and director of food engineering at the Illinois Institute of Technology.

Upon the retirement of the Worcester district manager of operations for American Steel & Wire division of U. S. Steel Corp., the position will be filled by Stephen B. Metcalfe (III) who has been assistant manager of that corporation since 1953. Best wishes on your step up the ladder of success!

Albert S. Redway (XV) wrote in September that he had resigned from the Continental Can Company to become President of Rockbestos Products Corporation at New Haven, Conn. The new company does all sorts of things with asbestos and particularly they specialize in fireproof insulation for electrical cables. The Class wishes you the best of success in your new position. All! One of the fortunate things about his new job is that he did not have to change his residence so he and Mrs. Redway keep up their old friends and associates. He attended the Educational Council Meeting at M.I.T. in September and believes that many benefits will result from the ideas advanced at that meeting. That opinion seems to be pretty unanimous. — HOWARD F. RUSSELL, *Secretary*, Improved Risk Mutuals, 15 No. Broadway, White Plains, N.Y. — WENTWORTH T. HOWLAND, *Assistant Secretary*, 1771 Washington St., Auburndale 66, Mass.

## • 1924 •

More news this month than you can shake a stick at. Let's start off with a nuptial or two. Early this summer Ellis O. Jones and Mrs. Ellen R. Fenton were married, the culmination of a childhood romance. Both had raised families in the intervening years and now, finding themselves alone again, decided "to make an end to a long detour." Immediately after the wedding they left for Baton Rouge where Ollie took up new duties as Associate Director of Purchasing and Traffic at the Ethyl plant. You may remember that Ollie was a Jr. His son, E. O. III, has gone to Istanbul as Visa Officer in the U. S. Consulate, taking with him his family including E. O. IV. From Havana comes the news that "Rafael Talavera Gaston y Julia Amezcaga de Talavera" participated in a *matrimonio* on September 18. That's the Amezcagas' older daughter creating, in Mike's words, "an additional potential source of grandchildren." They already have two by daughter Hortensia. Couple of June weddings that we haven't reported on, the Richard T. Lassiters' daughter Faith and the John H. Henningers' daughter, Patricia. Congratulations all around.

In September the New York Club threw its annual party at the Ruppert Brewery. Seems like most of the local '24 men were there, brought out not so much by the flowing beer as the fact that this was also a going-away party for Johnny Fitch. A few days later he took off for Rio where he will represent Ebasco. It broke Pret Littlefield's heart, but the medicos sent him home that very afternoon, because of a sudden and severe allergy. Paul Cardinal claims if he'd known in time he could have dosed him up with antihistamines and high vitamin C in no time. By the way, if you haven't been on the receiving end of one of Pret's chain letters yet, you probably will be shortly. On the strength

of the expected flood of news we may have to reserve a full page here regularly.

In the line of business changes, you may now refer to Anatole as Professor Gruehr. After long years as engineer and researcher for Consolidated Edison in New York, he has made the transition into the academic world in a big way. He is now Head of the Department of Economics and History, Polytechnic Institute of Brooklyn. From down Mexico way comes the news that Remington Rand has lost a good man. Clarence M. Cornish has gone into the business of fabricating, selling and installing kitchen, hotel and laboratory equipment. He has a title that will knock your eye out. He's Director General of Industria y Servicios Especializados, S. A. Nish has also been revamping his home, "camping out" while the operation was under way. However, camping out in that guest house is about as luxurious living as you could ask for. A change of a different sort was made by Miles Cary last June. Virginia Electric Power upped him from operating manager to Vice President in charge of operations, with general supervision of all gas and electric operations throughout the system. Belatedly we report on a promotion which occurred last spring. Hood Worthington is now director, instead of assistant director, of DuPont's Technical Division of the Atomic Energy Division.

Undoubtedly there was a lot more travelling done this summer than we heard about. The Carroll Dunns went to the west coast, mainly California. Bill Delahanty and his family relaxed on Nantucket. He got in a lot of surf fishing experience, but not many fish, one bluefish to be exact. Not exactly a vacation, but George Parker spent a couple of weeks in Florida working with Dick Jackson.

Again it is necessary to carry the sad news of deaths in the class. Azel Ames, a surgeon in Hamilton, Ohio, died of a heart attack last September. While at M.I.T. he took studies in Biology as a pre-medical course. In August John C. Pope, a Division Manager for the Ethyl Corp., died. Also in August, the 25th, George P. Davis died of leukemia at his home in Bloomington, Ill. George, a graduate of Williams, was with us the last two years. Since 1939 he had managed his family's farms near Bloomington. To the families of all three go our deep sympathies.

Trying to keep that Directory up to date seems like an almost hopeless task. You fellows get around too much. However, here are a few more changes which you may enter: Leon G. Ruquoi, 53 E. 66th St., N. Y. 21. That's Leon's home address, and to fill you in completely, he's Technical Consultant to the Steelmakers and Metalworking Industries of Belgium and Luxembourg. E. O. Jones, Jr. (H), 6429 Esplanade Ave., Baton Rouge 6, La.; C. M. Cornish (we gave you his company name before), Heroes Ferrocarrileros 41, Mexico 3, D. F.; F. O. Billings, Cape Vincent, N. Y.; J. C. Byrne (H), 591 Garden Lane, Pasadena 2, Cal.; P. W. Keppler (H), 7 Seville Way, San Mateo, Cal.; T. E. Mattson (H) 3041 Grand Ave., Miami, Fla.; W. L. Morgan (H), 1203 Moundview Ave., Newark, Ohio; W. W. Sturdy, Bldg. 540, Apt. 3. Ft. Monmouth, N. J.

By the time this reaches you Christmas will be just around the corner. From all your class officers and especially from your secretary, the very best of Christmases to all of you. Keep those chain letters rolling so we'll know what you're doing. Why did Tom Mattson go to Florida? Will Johnny Fitch get up to Sao Paulo to see Dolph Santos? When Carroll Dunn hit Santa Barbara did he run over to have a glass of lemonade fresh from Royce Greatwood's trees? We'll never know unless you tell us. — HENRY B. KANE, *General Secretary*, Room 1-272, M.I.T., Cambridge, Mass.

## • 1925 •

Last month, mention was made of Tony Lauria's South American trip. The best way to report it is to quote Tony's letter to you. The letter reads as follows: "Well at last I am starting to get back in the groove again, and let me tell you it sure was tough after a month of wandering about foot-loose and somewhat (not completely with a wife and youngster along) fancy-free.

"Our first stop was in Panama, where we went out to the Canal and saw a number of ships go through. Took pictures showing the progress of one particular boat, and they have come out fine and show what happens. We went touring about the city of Panama (both new and old) and the ruins of the first city which was sacked by pirates back in the 1700's or late 1600's. We also saw Ancon, Balboa and a number of villages along the way in both the Canal Zone and in the Republic of Panama. From there, we took a milk run plane and had a chance to see bits of Cali, Colombia, Quito and Guayaquil, Ecuador and then on to Lima, Peru where we spent 4 days. Two additional days were spent in going to Cusco and on to Machu Picchu, the capital and refuge location for the Incas back in the days before and during the days of the Spanish conquistadores. Very interesting and instructive. I was shocked to see a picture of Hiram Bingham (ex-Senator and Gov. of Connecticut) at the Hotel Tourista at the Top of Machu Picchu. But after the story came out, I remembered his exploratory work here. He had heard tales of the 'Lost City of the Incas' which incidentally the Spaniards never did find because of its remote location. Bingham, with several other Americans, went into the wilderness and found this spot and helped get the restoration and excavation of this spot started and continued. The highway (and what a thing of curves, sheer drops, no protection along the edge of the road, etc., etc.) is rightly named after him, 'El Caminho Hiram Bingham.' Well, I could go on and on to tell of the wonders of the Inca work with no modern stone-cutting tools, of the fine fit between tremendous pieces of rock where the edges match and interlock without benefit of mortar and where you couldn't insert a thin knife blade between these stones. Veritably a work of art, and it must have been of patience, etc.

"Cusco is a city to write home about. Really old and medieval.

"Flying the Andes from Lima to Cusco was a feat as well — and talk about rough country!

"Saw the new Sears stores going up in Lima and spent several days off and on with several of the Sears men I knew.

"We then flew on to Santiago, Chile and visited all over the city and then had side trips to Valparaiso and Vina del Mar. Again words do not describe the beauty of the mountains on the flight down and surprisingly I learnt of the tremendous extent of the coast desert that stretches down from Peru to almost the center of Chile. I found out about the Irishman (Bernardo O'Higgins) who helped liberate Chile and is on their stamps and statues galore and the main street named for him. He also had several others (McKenna and Cochrane to name two) who helped. It was noticeable that Santiago is the least Latin of the places we visited — maybe the oldtime Irish, Germans and other Europeans had something to do with it.

"We left Santiago just before sunset so had the chance to see and photograph the sunset over the Andes. We landed in Buenos Aires on the night of June 14th. On the 15th, we toured the city and took in all the highlights. On the 16th, we had another trip all planned when the revolution broke out. Being older than I was 25 years ago, I didn't venture out into the middle of it as I had done formerly. This time, I sedately stayed in the hotel and watched all the activity from our hotel balcony. After all, here I was married, I did not have to prove my mettle and wander into the thick of the fray to marry the gal I had imported into the country as I had done 25 years ago. I will admit however that I did have the yen to go out and look things over, but the restraining hand of my wife was heavy.

"Well, for three days, we were somewhat cramped, but each succeeding day I wandered further and further from the hotel until on the third I visited right down into the Plazo de Mayo and saw that damage and shot up buildings, etc. You have in the meantime seen them in TIME, LIFE, etc., so I will not bore you with the tale. We finally did get loose and saw some more of the city. In the meantime, we were getting behind schedule, and I was afraid the rest of our plane schedule would be shot. Accordingly, I hounded Pan American and finally, as soon as they released air travel, my pressure brought results. We were able to get out on the first plane to leave Argentina — and frankly, we all heaved a sigh of relief for there were so many people trying to get out that we could have been marooned there long enough to have reduced our Brazil time appreciably.

"Anyway we went on to Montevideo and, after a short stop there, went on to Sao Paulo, Brazil. We had a wonderful time and kept on the go all the time. While in Sao Paulo, we went down to Santos and saw all the sights down there. Then on to Rio de Janeiro. Gosh, how all these cities have changed and how they have gone in for really modern and striking buildings in contrast with our orthodox type of building. One question kept coming to mind however. Who is going to live in all the new apartment buildings, and where are all the tenants coming from for the new office buildings, and what is going to happen on any little pinch when you consider this is all being built on



paper and the banks are holding one terrific big chunk of it? Of course with currency depreciating in value all the time, there is in the actions of many people the old thought of not having money but real property and not of having credits but debts to be paid off in still further depreciated currency. All fine and dandy just so Brazil gets dollars, pound sterling, etc., to pay for her needs. When you see people patiently lining up for blocks, waiting for a bus to go home, you wonder. That the patience is wearing thin is shown by articles appearing in the papers. Yet the irony of it is that the bus company has busses needing repairs in the garages but because of lack of dollars cannot buy the needed parts to put them into service. This lack of dollars also prevents them from buying more busses. Increased trade with the Europeans is very evident, and again we get back to the lack of dollars. One of the lessons that we learned years and years ago in an Ec. course at M.I.T. was changed years ago in my own mind from what I saw in 4½ years of business. It was further shown on this trip. The old 'favorable balance of trade' idea that was hammered home and the idea that our economy was geared to exporting 10% of our production. The point too many overlook is the fact — if we sell, we must buy, or otherwise how does the other fellow pay his bill in the currency you want to get paid in — dollars?

"After several days in Rio, we went on to Petropolis which was the summer capital of the Emperors of Brazil and today is the summer place for the wealthy and government people who have the jobs and can afford it.

"On the way home, we stopped off in Venezuela between planes but did not have time to do much. From there, we came home, and here I am now back at work again to earn a few more shekels so maybe we can take another trip in the not too distant future.

"Have gone over about ¾ of my colored slides, and I do have quite a few good ones. Took 920 pictures, and I expect by the time I get through weeding out duplicates, sick ones, off-color, etc. that I will have 600 or so.

"Sometime when you plan on being in Chicago, give me a little advance notice and come on out to the house, and I will bore you if you are so inclined showing you some of the pictures. So long and best wishes. Tony Lauria."

Two other items concerning classmates have arrived recently. First, Lt. Clifford Stanley Abrahamson '50, the son of our classmate, Clifford O. Abrahamson VI, was killed in the crash of an Air Force plane near Hawthorne, Nevada on August 16. He was co-pilot of the twin engine C-27 which plunged into the top of a 6,000 foot peak. The Class of 1925 extends its sympathy to Abe and his family on their great loss.

Marion W. Boyer, X, has recently been named to the board of directors of the Commerce and Industry Association of New York. Marion is Second Vice President of Esso Standard Oil Company and was formerly General Manager of the Atomic Energy Commission. — F. L. FOSTER, *Secretary*, Room 5-105 M.I.T.

## • 1926 •

Business took your secretary to Norwich, Conn. recently to visit Louis Darmstadt who is V. P. of American Thermos Bottle Co. If any classmate can think up a legitimate reason to call on Louis or even a half legitimate one I can recommend it. Louis' office is located in the research building right on the bank of the river — a really delightful and relaxing spot for, shall we say creative thinking. Louis rolled out the red carpet for us. He belongs to a nice club in town where he took us for lunch and I am sure he must have given someone a nod as we walked in because we certainly were treated royally. It was a delightful visit and Louis really is to be envied with the life he must lead in this nice Connecticut town. I hadn't seen Louis since our 25th and then just a few weeks later we met again at the Alumni Officers Conference at M.I.T. This conference has been fully reported in the Review so we will not repeat other than to comment that it was a huge success and extremely well organized and run. It consisted of class officers, class agents, club officers, members of the Educational Council and Alumni Council. All were brought up to date on the present modus operandi and philosophy at the institute. Other '26 men were Eben Haskell from New Haven, "Dick" Jones from Philadelphia, Jim Offutt from Chicago, Chenery Salmon from Boston and Robert Williamson from Erie, Pa. This crowd actually held a minor '26 reunion at meal time and in the evening. Everyone left this conference much better equipped to carry on duties as alumni officers and many requests were heard for a repeat performance.

Just recently a notice came through from the Alumni Register telling of the death of Norman Hill of Akron, Ohio — no details. Norman and his wife were at Cambridge on Alumni Day and he never looked better. He had been associated with the rubber industry, most recently with C. P. Hall Co. The clipping services sent along a couple of stories about Bill Edwards and his perpetual calendar — what a persistent fellow! His idea seems to make sense but he is having quite a time getting it across. He divides the year into equal quarters of 91 days each and makes New Year's Day a day apart each year. All repetitive dates such as holidays always fall on the same day of the week and payday never comes on Sunday. So far Bill has had his calendar endorsed by the legislatures of Hawaii and Massachusetts and he's still pushing hard. Another clipping tells about Marron Fort's activities in Israel where he is creating a chemical industry. Marron is a member of the U. S. Operations Mission. His immediate project is to create a salt producing industry at the port of Eilat where the hot sun beats down year round and there is always a constant 14 mile an hour wind and the humidity is low. Man, that sounds to me like a wonderful potential yachting center — why bother with making salt when you could sail a boat all the time. The constant wind is to be used as a source of power when windmills are erected. Marron, you should get in touch with Bud Wilbur who has had a lot of experience with windmills as power

generators. A recent Boston visitor was Henry Rickard. He wrote in advance but it was just my luck to have meetings in Baltimore with Crown Cork and Seal Co. He has been busily engaged in a building program for his company. Another recent visitor was Argo Landau and his wife Edna. They were in town for the convention of the Photographic Society of America, both being amateur photographers. They came out to Pigeon Cove on Sunday and shot a few pictures and practically had me convinced that I should own an Exakta camera but being an old Leica man from way back, they will be disappointed to learn that the day after they left I went out and blew myself to a Leica M3. Edna Landau is leaving for Japan shortly on a tour for pictures and by the time she returns Argo will have a new home ready for her on the outskirts of St. Louis. Gordon Spear and his wife were also recent visitors to town and Chenery Salmon got a few of the boys together for lunch. Unfortunately I was out of town and did not know of their visit until I received Chenery's note. I can't find the note now but I recall that Don Cunningham was present and I think Cedric Valentine. Lots of visitors seem to be coming to New England these days. Well, the fire in the fireplace is dwindling to a few embers this Columbus Day evening at Pigeon Cove but I am reminded that this is the December issue so before putting out the lights we send you our best wishes for a Merry, Merry Christmas and a Happy, Happy New Year. See you in 1956! — GEORGE WARREN SMITH, *Secretary*, E. I. Du Pont de Nemours & Co., Inc., Elastomers Div., Room 325, 140 Federal St., Boston 10, Mass.

## • 1927 •

The United Press early last month referred to General Fred Glantzberg as "top U.S. Commander in Morocco." Due to a period of unusual tenseness, Gen. Glantzberg declared half of the protectorate out of bounds for airmen at the four big U.S.A.F. air bases. In a lighter vein, the New York Daily News states that the Arnold-Copeland Co. (D. K. Arnold) is actually advertising a vermouth atomizer which fits all vermouth bottles, furnishing just the right thin fog for the truly dry martini. Thanks to Dan Metzger for sending this one in.

Believe it or not, Bob Bonnar is already at work on the details of our 30th Reunion which will take place less than two years hence. Bob is the Chairman this time, and Glenn Jackson will be Treasurer. I imagine that I will be spending some time to bring the Class Book up to date for the occasion. — JOSEPH S. HARRIS, *Secretary*, Shell Oil Company, Aviation Department, 50 West 50th Street, New York 20, N. Y.

## • 1928 •

In a recent edition of the *New York Times* a picture of Mortimer C. Budlong appeared and the announcement that he had been elected to Director of General Time Corporation. Bud has been with Westclox Division of General Time Corporation since graduating with Course XV and is now Vice President and General Manager of the Division. We extend

our congratulations to you, Bud, and our very best wishes for your continuing success.

Dr. John B. Wilbur (Bud), our classmate by adoption, has also made the news. The *Boston Globe* of Sunday, October 16, carried a portrait photograph of Bud Wilbur and the statement that he was scheduled to address a joint meeting of the Boston Society of Civil Engineers and the American Society of Civil Engineers, Northeastern Section, on October 19. Bud Wilbur is Professor and Head of the Institute's Department of Civil and Sanitary Engineering. He is well known as author of the school song, "Sons of M.I.T." — GEORGE I. CHATFIELD, *Secretary*, 49 Eton Road, Larchmont, N. Y. WALTER J. SMITH, *Assistant Secretary*, 15 Acorn Park, Cambridge, Mass.

### • 1930 •

The Class completed a very successful 25th Reunion on Campus in June. A total of 102 classmates were present for at least one of the events with 13 more attending Alumni Day exercises, and another 39 were interested enough to send the original \$5.00 deposit. Besides the Alumni themselves, 60 wives and 29 children were also present. The Committee talked with most of those present and the general consensus of opinion was that the recent innovation of having the 25th Reunion on Campus — particularly with the facilities at Baker House — was well worthwhile. It gave the returning Alumni an opportunity to see for themselves the great changes that had taken place not only in increased building facilities but the changes also in academic approach as well as an opportunity to enjoy the increased recreation facilities now offered.

The Class Banquet was held at the Parker House with Hijo Marean as Chairman of the Reunion Committee introducing President Killian, who addressed the Class. Jack Jarosh acted as Master of Ceremonies and two members of the Class were speakers. Bryant Kenney, who is Vice-President of Standard Oil Company of New Jersey, talked on his business experiences and his adventures in his travels through the Far East, and Louise Hall, who is Professor of Fine Arts at Duke University, gave a dissertation on the background of Architecture and spoke of some of her personal experiences. Two of our officers who have served the Class long and faithfully retired at this meeting — Jack Bennett as President, and Parker Starratt as Secretary-Treasurer. Jack Latham was elected as the new President, Joe Harrington as Treasurer, and George Wadsworth as Secretary, with Louise Hall and Ralph Peters as Assistant Secretaries. A committee of three was appointed to find a place for that important event — our 30th Reunion. This committee consisted of Maurice Herbert, Thomas O'Connor, and Parker Starratt. As a matter of fact, though the cost was very closely figured in advance for the 25th, the Class is very fortunate in that we came out on the plus side with a few hundred dollars left over to start us on our 30th Reunion. A large amount of statistical information on our Class was obtained during the Reunion which will be of interest to the Class in future issues.

Speaking of our retiring Secretary-Treasurer, Parker Starratt was enrolled in the 25-year section of the Long-Service Club at Bethlehem Steel's Fore River Shipyard.

It is with great regret that we heard in August of the death of Dr. William G. Thompson of our Class. He graduated from the Harvard Medical School in 1934 and except for his service during World War II in the Navy Medical Corps, he practiced as physician and surgeon in Andover, Mass. — GEORGE P. WADSWORTH, *Secretary*, Room 2-287, Dept. of Mathematics, Massachusetts Institute of Technology, Cambridge 39, Mass.

### • 1931 •

News from our class continues to be rather scarce, but at least this month we have some news to report. Frank O'Leary, VI, has been elected executive vice-president of Emhart Manufacturing Company. He has been with Curtiss-Wright since 1948 and was a vice-president and manager of the Propeller Division of that company. Prior to his service at Curtiss-Wright, he had been with the Ansco Division of General Aniline and Film Corporation, as well as Chase Brass and Copper Corporation for a period. Another note announced that Colonel Robert J. Fleming, Jr., division engineer of the Army Engineers in New England, had been promoted to Brigadier General. General Fleming has had an outstanding army career and is a graduate of the United States Military Academy, as well as our Class of 1931. News from Charlotte, N. C., informs us that John P. Elting has been named chairman of the Research and Technical Service Committee of the American Cotton Manufacturers Institute. Getting further south, Brazil to be exact, a report describing the world's largest TCC cracking unit, at Capuava, Brazil, mentions the work of John H. Arnold, X, who supervised the mechanical engineering design and initial operations of this mammoth plant.

On a sadder note, the *Boston Globe* reported the death of John J. Sullivan, at Concord, Mass. Prior to his death he had been a Massachusetts Department of Public Utilities Mechanical Engineer for sixteen years. Another bit of sad news concerns Mr. Robert B. Cheney. Although not a member of our class, most of the Course II men will remember with gratitude the many kindnesses and favors bestowed by Mr. Cheney while a technical instructor in the Department of Mechanical Engineering. He passed away suddenly on August 16, 1955.

As you will have noted from your mail, the ball is rolling in preparation for our 25th Reunion. A Steering Committee has been formed, and meetings are held on the second Tuesday of the month. It is some project, and it has resulted in many new faces appearing. At the last meeting Otto Kohler was down from South Hadley, and at other meetings we have seen Al Nagel, Wy Boynton, Don Sinclair, Al Dowden, to mention just a few. If you are in town, drop in at the Faculty Club and let us have your support and ideas. Please keep the news coming. — A. L. HESSELSCHWERDT, JR., *Secretary-Treasurer*, Room 1-125, M.I.T.

### • 1932 •

Correspondence from Tom Sears and Rolf Eliassen shows considerable progress in developing the 25th Reunion plans.

As I told you last month, a great deal of interesting information on our classmates has come in during the summer, and on some of the fellows that I'd given up hearing from!

Charlie Spiegel writes from 14148 Calvert Street, Van Nuys, Calif., that he is having a grand time being president of his own company, the Play Ball Baseball Pitching Machine Co. He's the one who makes these baseball pitching machines we've been batting at in the local amusement park concession. I certainly found out how rusty I've gotten! I should think Charlie's machine would have application in the big league training. Any of you who haven't taken a few cracks at the ball this way, be sure to do it. It's a lot of fun.

Another one of our novel entrepreneurs is Earle Hiscock, president of KIP, Inc., Old Harbor Road, Chatham, Mass. KIP is a patent-holding company for Earle's inventions, which cover primarily a method of brewing coffee and tea, then packaging the same. Earle also markets under his own separate trademark other items which he has developed, the last being a new weathervane called "Windmark." Good for you, Earle, and maybe you've got some patentable ideas for the Reunion.

Bill Hodges' mother writes that he is on his way to Japan for three years' duty with the U. S. Army Engineers. His last post had been in Germany.

Herb Neustadt, 257 Hanover Street, Annapolis, Md., is teaching electronics at the Naval Academy. On the side he's working on the development of a new electronic musical instrument, which he says is a lot of fun.

Roger Zampell is head of the Engineering Branch of the Public Works at the Naval Research Laboratory. His principal job is handling design and construction aspects of buildings and facilities for the Laboratory. Rog has two children, and is looking forward to making the Reunion.

Ed Moran is section manager of the X-ray division of the Westinghouse Electric Corporation. He was in the news recently, having been selected by the Federal Civil Defense Administration to participate in its training program at the Nevada test site in connection with the present atomic test series. He is currently serving as director of radiological services for the Civil Defense Organization of Baltimore. This training is provided to give State and local defense personnel experience in evaluating radiological hazards resulting from actual nuclear explosions. Only about 25 persons from all sections of the U. S. have been nominated to attend this training.

Dick Rafter writes from Clayville, R. I. He is a development engineer working for the Grinnell Corporation in the research lab on products related to air conditioning. He enjoys his work and his employer; also, living in Rhode Island. He's got a boy in college and a girl in grade school, and is building his own house. With a number of hobbies, Dick



seems to be leading one of those good lives.

Al Reidell writes from Azusa, Calif., 120 East Foothill Boulevard, telling that he had forsaken engineering some time ago, and is now in optometry, which he finds a most interesting field.

Carl Ziegler is now manager of the Cellulose Division for Celanese Mexicana, living at Edgar Poe 221, Mexico, D. F.

Harold McCormick is a manufacturers' representative, living at Phoenix P. O., Baltimore County, Md.

Johnny Such writes from 9 Bruce Road, Norwood, Mass., where he is a research physicist for the Kendall Co. He's glad to be back in New England after 12 years down South. His four children he refers to as a growing family which keeps him pretty busy. He gets down to M.I.T., which he affectionately refers to as Shangri-La-on-the-Charles, occasionally for some library work. He agrees with me that things are certainly changed down there!

George Murray, a chemist with the Q.M.C. Research & Development Command, lives at 29 Balfour Street, Lexington, Mass. He has worked primarily in various aspects of high polymer chemistry and is now in paper chemistry for the Quartermaster Corps.

Raymond Martin is assistant chief distribution engineer for the Pacific Power & Light Co. He's living in Portland, Ore., at 920 S.W. 6th Street.

Stan Johnson has moved again, this time to 134 Sun Haven Drive, New Rochelle, N. Y. He's still working on the New York State Thruway. We last reported Stan down in Jacksonville, Fla. He's carried his interest in sailing to New England, and has the thankless task of secretary to the Nyack Boat Club. He opines that while the Hudson may not be the most ideal spot in the world for sailboat racing, there is considerable enthusiasm in the various clubs. His one boy, Harry, is entering college this fall, following his father's footsteps by taking civil engineering.

Bob McCaa sends a correction to the April Notes. He wants me to report his son David's college correctly as Franklin and Marshall College rather than Frank and Marshall, hoping that Benjamin Franklin will rest more peacefully in his grave with this clarification!

And Bill Kirkpatrick expresses his conviction that more of M.I.T. men should go into smaller businesses. He feels as I perhaps do myself, that too much emphasis is placed on getting into big companies. This might be an interesting subject to develop at some Reunion bull session!

Best regards to all, and let me hear from you if you have anything to get off your chest, or any news. — ROBERT B. SEMPLE, *Secretary*, Wyandotte Chemical Company, Wyandotte, Mich.

### • 1933 •

Honors this month go to Beau Whitton who volunteered his services at the recent Alumni Officers' Conference at Cambridge and has submitted the following for which your secretaries are indebted to Beau: "Six members of our class were together at the first Alumni Officers' Conference held at the Institute

September 9–10. Several times during the two days the group gathered and talked over old times as well as swapping lies. Included in the group were: Jack Andrews, XV, John F. Longley, VIA, Clarence Westaway, I, Bob Kimball, XV, Dick Morse, VI, Beau Whitton, XVII. Jack Andrews is now Assistant to the Highway Commissioner in the New Jersey State Highway Department. He lives at Westfield, N. J., and has three children (all girls, 11, 9 and 6). Jack has just completed a tour of duty as president of M.I.T. Club of Northern New Jersey, after serving in other positions with the club. Before going with the Highway Department about a year ago, Jack was with the General Cable Company. He reports that his new duties consist primarily of administrative work. John Longley is with the New York Telephone Company, where he has been ever since graduation, except for five years in radar work in the Army. He also has a family of three, but they are all noisy boys. Presently he is engaged in the transmission group of engineers and is particularly concerned with mobile radio, television and related problems. Several years ago during the Development Program, John was president of the M.I.T. Club in Albany. Clarence Westaway is with the Ingersoll-Rand Company in Boston and still single. On Sunday after the Conference, Westy took Daphne and Beau Whitton on a tour of the north shore of Boston; Beau reports a delightful day and says that Daphne, under Westy's tutelage, enjoyed her first lobster. Bob Kimball, as we all know, is secretary of M.I.T. He reports that his current claim to fame is that he now has two sons in M.I.T. (a senior and a freshman). Bob's work at the Institute is principally concerned with development. Dick Morse looks his usual chipper self and is keeping busy with the affairs of National Research Corporation and has his office on Memorial Drive, almost within a stone's throw of the Institute. Beau came up for the Convention from North Carolina. His wife, Daphne, joined him when it was over. As previously reported, they saw Westaway and later other folks at the Institute. At the same Convention we had a report from Dayton Clewell, who is now Research Director with the Magnolia Petroleum Company. Clewell was very active in the promotion of the very successful Southwest Regional Conference of M.I.T. held earlier this year. Clewell has been president of the M.I.T. Club in that area and makes trips back to the Institute every year or two, looking for talent. Professor Sam Prescott gave us the word on Sammy, who lives at Derry Village, N. H., where he directs the affairs of Benjamin Chase Company. No one would ever believe that there were enough little wooden tags made to tie on flowers and shrubs to keep a man alive, but Sammy stays very busy in that particular field. Professor Prescott reported that the company is probably the largest in that particular business. Sammy was down in North Carolina at the Southern Nurserymen's Convention in Asheville in the early Fall. Beau says, "Why don't you call up, Sammy, when you are that close?" Lou Flanders, who has served as our so-capable class agent for a number of years, is with the Engineering Depart-

ment of the Factory Mutual Insurance Group. Lou says he is particularly concerned with fuels and gases, particularly with the writing of safety codes and operation codes where gas is used as a fuel. Lou and his wife, Florence, have two children; Nancy, who is now 13, and 'Chippy,' who is 12. There was also a report at the Convention from Bert R. Rickards, Class of '99, the father of Leighton Rickards. Mr. Rickards reported that Leighton now lives at Pleasantville and has three children 'coming along nicely.' Thanks again, Beau. Jim Turner spent his vacation in Maine. Jim is president of the Meadville Chamber of Commerce this year. Ed Goodrich toured the M.I.T. campus with sons Walter 13 and Bill 10. Walter has his eye on M.I.T.; Bill has a yen to be a sports writer. Bill Arnott came to Cambridge to take two Special Summer Programs on Strain Gages. Bill is a research engineer in Norwalk, Conn., and has two sons, ages 10 and 12. We were sorry to learn that Fred Feustel is now blind as a result of his long bout with diabetes. But we understand that Fred is happily employed by the City of Fort Wayne, concerning himself with the utilities business. — GEORGE HENNING, *Secretary*, 330 Belmont Avenue, Brooklyn 7, N. Y. R. M. KIMBALL, *Assistant Secretary*, Room 3–234, M.I.T., Cambridge, Mass.

### • 1934 •

By the time you read this, our 1934 Compton Scholarship Fund project will be well under way. In last month's Review, this twenty-five-year class gift plan was disclosed in class president Hank Backenstoss' letter to the Class. The goal is to raise between now and 1959 the sum of \$100,000 for scholarships at the Institute. During this period, all contributions to the Alumni Fund will be credited to the scholarship fund. The amount is large and represents more than five times the class' previous giving rate but should be attainable if the enthusiasm thus far shown is a true gauge of class interest. A Class Fund Committee of some seventy members of the Class will help carry out this project on a person to person basis wherever possible. These will report to a steering committee of sixteen. Those involved in this steering committee are Hank Backenstoss, Frank Baxter, Bob Becker, Sam Blake, Jink Callan, Les Doten, Louis Frank, Sam Groves, Chuck Kearney, Walt McKay, Dave Mooney, Ed Nowell, Ed Rand, Mal Stevens, Roger Williams and Carl Wilson. As of mid-October, the steering committee has had meetings in Cambridge and is nearly through the task of lining up the Class Fund Committee. This committee will work to get first gifts in before the end of the year permitting inclusion in the 1955 tax year.

Returning to older news, Alumni Day at Cambridge last June brought together a class group. Present at the '34 table at the Statler banquet were Hank Backenstoss, Bob Becker, Martin Cosgrove, Les Doten, Joe Fishman, Arthur Grout, Irving Kusnitz, Simon Malkin, Henry Morss, Jr., Jean Raymond, Leonard Shapiro, Roger Williams and Carl Wilson.

During the summer, Mal Stevens tells us that Merlyn Richardson stopped in to

see him at the Institute. Merlyn is a material handling consultant for duPont in Newark, Del., and his family had been spending the summer on Cape Cod.

Sidney Nashner died last August, leaving his wife and three children. He had been manager of the Sherritt-Gordon Mines, Ltd. refinery at Fort Saskatchewan, Alberta, Canada, for three years prior to his death. Originally from Hartford, his career included metallurgical research with U. S. Steel before the war and a wartime tour as commander of the Army's Chemical Warfare plant at Pine Bluff, Arkansas. The Class records his passing with sorrow.

A July dispatch tells of Dan Strohmeier winning the Manchester to Halifax ocean yacht race with his *Malay* which had been severely damaged in one of the hurricanes of the previous fall. The *Malay* made Halifax with patched sails after battling a gale during the course of the three-day race. Dan has made an impressive record with *Malay*, having won the Newport to Bermuda race the previous year.

Phil Kron is to be thanked for his August letter which follows: "You will be interested to know that Pete Barry, Class '34, has just been appointed Mayor of the City of Rochester. He is taking this on in addition to his regular responsibilities as Director of Safety for the Rochester Gas and Electric Corporation. My opinion is that he will not have time to get into much mischief.

"I was very happy to read Hank's preliminary explanation of the twenty-fifth anniversary gift of the Class. It should be a real challenge to us but one that we can also be quite proud of. Best regards to the other classmates in the Boston area."

It appears that Pete Barry got his political start in 1949 when he was commander of Rochester Naval Militia and Naval Reserve units. These Navy groups were seeking a new armory and wanted to lease Convention Hall which the city fathers had decided to raze for a parking lot. Barry fought this successfully and has since become a key figure in Rochester affairs. Belated congratulations to our Mayor!

During the summer your secretary had good visits with two classmates in Los Angeles. A day was spent with Ray Holland visiting the Palmdale Air Force facility. Ray lives with his family in Roswell, N. M., and is associated with New Mexico Military Institute. He conducts aeronautical studies for various sponsors, operating as a one-man engineering staff based on the experience of his many years at Lockheed. Also, two good sessions with Jim Kendrick were much enjoyed. Jim holds senior responsibility at Aero-physics Development Corporation and has little time to enjoy with his family the very fine swimming pool at his Los Angeles home. He also is an ex-Lockheed engineer.

Joe Drankowski stopped in at the Institute while on his vacation to report that he has left aircraft after all these years and is now designing buses and trucks for General Motors Truck and Coach in Pontiac, Mich. Joe is chief draftsman of this organization and he recently moved from G.M.'s Kansas City aircraft produc-

tion facility, which had been phased out, as the jargon puts it. Joe, with his wife and son, live in Birmingham, Mich.

Your secretary saw Steve Muther in Easton, Pa., where Steve is director of research at Dixie Cup Company and a member of the Institute's Education Council. The occasion was a swing during early October through eastern Pennsylvania visiting secondary schools in behalf of the Admissions Office. Steve rallied round as host at Easton High School in a most helpful way.

A news story from Orono, Maine tells of the work of a new department of food processing at the Agricultural Experiment Station of the University of Maine. Dr. Matthew E. Highlands is head of the department which is engaged in many phases of research pertinent to Maine food industries. The electronics division of Westinghouse in Baltimore last June promoted David R. Tashjian to the post of manager of engineering. Both Dr. Highlands and Mr. Tashjian received their master's degrees with us. — WALTER MCKAY, *Secretary*, Room 33-211, M.I.T.

### • 1935 •

As you know, Class Secretaries' notes depend for the most part on information from members of the Class. I will try to get as much information as possible myself. However, in the main I will have to depend on class members to send me some newsy information — so please send me all the dope.

Your Class officers held their first meeting on the drive for the 25th year gift and reunion. On September 22 suggestions for Committee Chairman were made, and President Jack Colby is now twisting the arms of the prospective candidates, in order to get them to accept the responsibilities. A complete list of the committee will be available soon. Field Agents from all over the country will be asked to participate in the program and, of course, volunteers will be more than welcome. Drop us a line if you will lend a hand. Part of the program we are establishing will be an annual or semi-annual newspaper, which will include data on the drive, information about M.I.T., reminiscence of our years in Tech, and notes and articles by and about our Class.

The Class of 1935 was represented in the first Alumni Officers' Conference at M.I.T. on September 9 and 10 by Bernie Nelson, who is Division Traffic Superintendent of the New York Telephone Company, and resides with his wife Rhoda and his two girls at Addison Lane, Greendale, New York; Randy Antonsen, who is manager of research and development of Godfrey L. Cabot, Inc., 38 Memorial Drive, Cambridge; Don Taylor, who is in charge of the Steel Tube Division of Bethlehem Steel, New York office; Earl Megathlin, president of Whaling City Marine Company, 56 Prospect Street, New Bedford. As you might expect, Earl and his family are boating enthusiasts, and the launching of a new craft interfered with his attendance at the reunion. A report of this conference will be available to all M.I.T. graduates soon.

Ernie Van Ham, on a recent trip, met Phil Johnston, who is now General Sales Manager of the U. S. Gage Division of

American Machine and Materials Company, Sellersville, Pa., and found that both have archery as a hobby; so now Phil is planning on visiting Ernie at his camp in New Hampshire for a hunting expedition with bow and arrows. John Taplin has been seen around the Institute from time to time. He is President of Bellofram Corporation and Kendall Controls at 144 Moody Street, Waltham. — FRANCIS W. MULDOWNY, JR., *Secretary*, 1109 Boylston Street, Chestnut Hill 67, Mass.

### • 1938 •

Your class secretary has had an autumn that cannot be classed as routine. In mid-September I attended the American Chemical Society in Minneapolis to deliver a paper concerning lignite and its use for power generation. Paul Des Jardins kindly stopped by to hear the dissertation. I returned from the trip just about in time. As it turned out, the following week I wound up in the hospital to have my appendix removed. From that point things have been routine, and I am now recovered and back to work.

An announcement arrived recently from Don and Phyl Severence. Their family has been increased by the birth of a daughter, Gail, on September 20.

Ascher Shapiro is now at Cambridge University, Cambridge, England, with his family. As an exchange Professor in the Engineering Department for the academic year of 1955-56, he will teach thermodynamics. In the meantime his children attend school in England. He is associated with St. John's College, of which he has been made a temporary member. He has been asked to represent President Killian in November at the Celebrations of the University of London in connection with the installation of the Queen Mother as Chancellor.

Louis Heaton was recently elected an assistant secretary of the New Hampshire Fire Insurance Co. and of its subsidiary the Granite State Fire Insurance Co. He has been with the organizations since 1948. Henry Allen, Jr., has been appointed Executive Director of the Mississippi Agricultural and Industrial Board. He was formerly head of the Board's Industrial Department.

Richard Young was recently elected president of the Acushnet Process Company in New Bedford. We reported some time ago when he was appointed treasurer. Among other activities, he is also a director of the First National Bank of New Bedford and a trustee of the Fairhaven Institution for Savings. — DAVID E. ACKER, *Secretary*, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge, Mass.

### • 1940 •

The '40 column fluctuates between feast and famine, this being one of the leaner months. Recently, while I was in Pittsburgh, Pa., on business, I ran into Dave Morgenthaler. Dave is Vice-President and Director of Sales for the Delavan Manufacturing Company of West Des Moines, Ia. In September, on my vacation, I was passing through Madison, Ind., and got in touch with Beano Goodman, President of the Madison Chemical Company, manufacturers of detergent and cleaning compositions. Beano



showed me through his plant and it was quite a unique experience to see how the competitor of Lever Brothers, Procter and Gamble and Colgate-Palmolive, operates. Beano makes a very effective liquid dish-washing compound which I would highly recommend to you. John Beattie is President of the Polycast Corporation and Optical Plastics, both of Stamford, Conn. A recent issue of the Stamford paper had a picture of John together with molds employed by him in making solid plastics. There is an article by Jim Rumsey on how to handle Dacron-Cotton Blends in the July 1955 issue of the Papers of the American Association for Textile Technology, Inc. Jim is Assistant Manager of Women's Wear Merchandising for DuPont and is apparently the man to see if your wife needs an extra pair of nylons. — ALVIN GUTTAG, *Secretary*, American Security Building, Washington 5, D. C. SAMUEL A. GOLDBLITH, *Assistant Secretary*, M.I.T. Department of Food Technology, Cambridge, Mass. MARSHALL D. MCCUEN, *Assistant Secretary*, General Motors, Oldsmobile Division, Lansing, Mich.

### • 1941 •

Preston Gladding and Richard Hearn have recently formed the Gladding-Hearn Shipbuilding Corporation of Somerset, Mass., with Pret as president. The firm is specializing in welded steel ferries, tugs, excursion boats, tankers, barges, and similar commercial craft. Construction will be initially limited to vessels sixty feet or less in length, and the force will be about thirty men; the facilities are to be expanded ultimately to build craft up to two hundred feet long, and to employ one hundred men. After graduation, Pret went with Bethlehem Steel Company, serving as assistant to the hull superintendent during the construction of the Hingham yard. He spent three years in the Navy as a hull officer in the repair and conversion of fleet units, and in the mothballing program at the end of the war. He then returned to Bethlehem, working in the central technical department and the East Boston repair yard as ship supervisor. He became manager of the Bristol Craft Corporation in Bristol, R. I., in 1947, and in 1950, joined in the forming of Blount Marine in Warren, holding the position of Vice-president, and designing and supervising the construction of the firm's steel commercial craft. The best of luck in your new business, Pret!

Other changes in position include Hank Pohndorf, now promoted to the Vice-presidency of the National Welding Equipment Company of San Francisco; and Irv Koss, who has joined Motorola, Inc., as administrative assistant to the Vice-president in charge of the communications and electronics division. John Meier is seeking nomination to the Suffield, Conn., Board of Education. With two children in the elementary schools, he has a definite interest in the educational program. He was until recently a senior project engineer at Hamilton Standard Propeller Division of United Aircraft, and is now a Vice-president of the Klock Corporation in Manchester. Carl Oldach, a graduate student with our class, has been made assistant direc-

tor of Dupont's development department, where he will be concerned with new material sources, developments in the company's established businesses, and possibilities for growth and expansion. Another graduate student, Vincent Kling, was the subject of a two-page article in the Sunday Philadelphia *Inquirer* last August. He started his own architectural firm in 1946, and has since designed and built the new Lankenau Hospital, and new wing of the Jefferson Hospital, RCA's Cherry Hill office and research center, and many other buildings in the Philadelphia area. He is married, has two sons, and lives in Penn Valley.

It seems hard to believe, on this rainy October afternoon that these notes are being written, that by the time they reach you, another year will be almost ended. How the time flies! Season's greetings to all of you, and we're looking forward to seeing a great many of you at the fifteenth reunion in 1956. — IVOR W. COLLINS, *Secretary*, 28 Sherman Road, Wakefield, Mass.

### • 1942 •

We thought that you would be interested in a letter written not long ago by Charles H. Smith, Jr. to the employees of the Steel Improvement & Forge Co. (Chuck is president). Our material comes from a long article by John E. Bryan, Financial Editor of the Cleveland *Plain-dealer*.

"There has been an increasing tendency in recent months for corporate directors to pay out a greater proportion of earnings and retain less in the business. But the ratio of dividends to profits still varies widely, some companies paying out more than 80%, while some retaining almost all earnings for future growth.

"Of each 'sharing' dollar at Steel Improvement last year 89 cents was used to pay hourly wages, 6% cents went to salaried employees including officers and directors, 1% cents was paid to owners in dividends, and 3% cents was available for 'progress sharing.' This 'progress sharing' is probably the most important item of all because it represents the portion of our income which was available to develop new products, buy machinery, and create new jobs. The size of this figure indicates that we have not done as good a job as we should have during the past year. Three and one fourth cents from each 'sharing dollar' or 1% cents from each income dollar is too small an amount to be available for such an important task. It is my belief that we should work to get that sum to at least 3 cents from each income dollar, (or almost 8 cents from last year's sharing dollar), if we are going to have an adequate amount of job security and new opportunities."

Charles became president of the company on his father's death, just a few weeks from graduation in April, 1942. Last January he was named Cleveland's "outstanding young man of the year" by the Junior Chamber of Commerce.

Also of considerably more than passing interest is an item that appeared in the Buffalo *Courier Express* under the head, "Reporter Caresses a Boa Constrictor" by Katherine Smith. It reads as follows:

"Your Good Listener is only one of two women visitors to the home of Ronald E. Shainin, 403 Windermere Blvd., Eggertsville, who have cared or dared to stroke Shainin's pet, an Emperor boa constrictor more than a yard long. The thick, muscular reptile consents docilely to the stroking of his smooth, healthy skin unless one touches his sensitive or ticklish tail. Then the snake withdraws with alacrity from the gentlest hand.

"The boa was only two days old when a zoo head gave him to Shainin eight months ago. At that time the snake was 14 inches long. Shainin gave him his first mouse and watched him kill it adroitly. The snake formed his body into a pose resembling the letter S and waited for the mouse to approach. The moment the mouse contacted his body, the reptile crushed it and swallowed it head first. That act inspired the Boa's name, Crusher.

"Shainin can leave his pet alone several days without neglecting him, for the boa consumes only two meals a week. His feeding habits, however, present a difficulty: the snake accepts only living nourishment. The owner gratifies this taste by breeding mice to provide healthy, mature rodents for each week's fare. For months Shainin has tried to photograph a play-by-play movie of Crusher killing his mouse and devouring it whole, his neck distending to allow the body to pass into his stomach. To date, no motion picture camera has been rapid enough to catch the swift movements of the snake consuming his prey.

"While your Good Listener patted the boa, Shainin held the reptile's head, remembering that once when he straightened Crusher to measure his length against a yardstick he received a painful bite. When the snake evinced a liking for heat, a light bulb was introduced into his cage. It burns during our long cold season. The reptile's predilection for climbing is gratified by the insertion into his lair of a large branch which he climbs with agility and speed.

"Shainin intends to keep Crusher until the snake grows to a length of about fifteen feet. Then he will be offered to a zoo.

"Near the boa constrictor's cage in the living-room are the heads of a lion and lioness and skins of two zebras shot by Shainin in Africa when he made a three month's safari in 1953. (You may recall that he and a friend had been invited by a regional chief in Central Africa to help rid the country of predatory lions.) With his movie camera Shainin got close-up motion pictures of lions engaged in such characteristic activities as playing, killing their prey, and feeding.

"His picture story, titled 'Lion Country,' was sold recently to Almanac Films Inc. to be made available to schools, museums and libraries throughout the United States and Canada. While in Africa he used to wrestle with a tame lion cub. Frequently he allows Crusher to coil about his arm. Shainin enjoys observing at firsthand the habits and play antics of creatures most of us prefer to avoid." Our thanks to Ronald for making such intriguing copy.

It is with sadness that we report that

the polio epidemic hit our class and took from us Clyde F. Hayward. He was a chemical engineer active at Tech in the A.I.Ch.E. and the 5:15 Club. He took Chemical Warfare ROTC and served with distinction in the Army during which time he was awarded the Bronze Star. He left military service in December 1945 with the rank of Major. Until his passing he had worked for Lever Bros. first in Cambridge and more recently in Edgewater, New Jersey. His widow, Shirley, lives at 101 E. Grand Ave., Montvale, N.J.

Congratulations are in order for Bernard W. Moulton, recently promoted to Commander (USN) and assigned to the USS Hugh Purvis DD709 out of New York. Lloyd St. Jean has moved to Nashua, N.H.

Best wishes for a very Merry Christmas. — LOU ROSENBLUM, *Secretary*, Photon, Inc., 58 Charles St., Cambridge 41, Mass.

## • 1943 •

Stan Roboff is the co-author of the book, "Materials for Nuclear Reactor," with Dr. Henry H. Hausner, manager of atomic energy engineering for Sylvania. The book has been published by the Reinhold Publishing Corp. of New York City. In the book, the scientists describe the basic materials used in nuclear power reactors, and problems associated with their use.

The authors predict the supplying fuels and parts for atomic power reactors will be a billion-dollar business by 1980. Stan has been manager of industrial coordination of the atomic energy division of Sylvania Electric Products Inc. He took part in Government A-bomb projects during World War II.

Jean Hartshorne recently joined the Insurance Agency of Charles F. Hartshorne & Son, Inc. in Wakefield, Massachusetts. He has been in training at the Advanced Insurance School in New York City and is now actively engaged as an insurance broker with the Hartshorne Agency. It is interesting to note that Jean is carrying along the family tradition by becoming another fourth-generation member to enter the insurance business. Until recently, he was a captain in the United States Air Force.

Last month's notes covered a news-gathering period of four months. In the years to come I am sure that our class will fill page after page of the Review every month with news of our wonderful doings. Until then, however, any contributions would be sincerely appreciated. — RICHARD M. FEINGOLD, *Secretary*, 49 Pearl Street, Hartford 3, Connecticut.

## • 1945 •

Our Tenth Reunion was a booming success; to those of you that attended we hope the following resume will go with your holiday eggnog, to those of you that were unable to attend (we give you all the benefit of doubt!) we hope we don't miss any of the highlights.

The festivities started as per schedule at the Hotel Curtis as J. J. and Edna Strand arrived by plane from Cleveland via Albany about 1:30 p.m. Friday and immediately checked in for a nap — J. J. claimed he needed the rest! Actually he took advantage of the working multitude

for he was able to stay lively til 5 a.m. Saturday. There I go getting ahead of myself. Digressing a moment, by the time I arrived at the reunion we already had one foot in the grave for I spent two days entertaining two visiting dignitaries by night and endeavoring to work by day. Julian (Buzz) Busby of Okmulgee, Oklahoma and Vince Butler of San Francisco arrived in the city of bright lights a couple of days early to warm up! Let me say here that Vince Butler is a changed man!

Buzz and I arrived in Lenox at 4 p.m. about the same time that Dave and Mary Trageser; Dave and Janice Flood; Pete and Lou Hickey; and Fran Springer arrived from Boston. Needless to say it didn't take Co-chairman Trageser long to get things organized. The martinis and manhattans were set up in the lobby as Dave Flood spread the various "For Sale" items from Coop in the lobby area. Before the 6 p.m. Garden Dutch Cocktail Hour was over most of the Friday arrivals were on hand: Marshall and Dorothy Byer; Frank and Ginny Carroll; Dave and Peggy Clare; Dave and Babs Cohen; Romeo and Irene Favreau; John Gaffney and Carol Crandall; Bud Hetrick; Co-chairman Tom and Betsy Hewson; Harty and Blanche Kircher; Bob and Ann Maglathlin; Bill and Betty McKay with Jeanne Pelley (Ray arrived a little later from Cincinnati, Ohio); Oakie and Lulu (its Louise now!) O'Connell; Chuck and Jane Patterson; Jerry and Libby Patterson; Phil and Jasmine Pocock; Max and Trudy Ruehrmund; Chick and Helen Marie Street; Bob and Carol Welch; and Bob and Dominica Wiegand.

As one might expect, the cocktail hour, as was the entire weekend for that matter, was spent renewing acquaintances and comparing family statistics; the comparing of this statistical information was the scientific summit achieved by this distinguished group of engineering refugees! During dinner where we broke up into several smaller groups, many late arrivals appeared: Tom Stephenson with Al and Louise Oxenham from Pittsburgh; Les and Lucille McCracker from Washington; Frank and Alice Donohue from upper New York State; and George McKewen. Dinner was followed by milling about in the lobby as well as a renewal of the cocktail hour. As the hours ticked away many journeyed to bed for what they hoped was a good night's sleep. What fools our classmates be! With the arrival of Vince Butler and Lynn Kichenberg (several hours late — in my car!) the evening's tempo picked up with a bang. As many tried to sleep, the phones in darkened rooms rang; ringleaders Butler and Strand were leading the troops in song and dialect. Probably the best event was the arrival of Leo Rosenblatt, the New York broker who had reserved Maxie Ruehrmund's room. With the night telephone operators and watchman bought off it was not too difficult for J. J. Strand to call Max at 3 a.m. to inform him Mr. Rosenblatt had arrived and it would be necessary for Max and Trudie to move to another room since Mr. Rosenblatt always slept in the same room. Max had a long face and burning eyes as "Bellboy" Bob Wiegand called for his bag some fifteen minutes later. The foregoing is just a sam-

ple of the revelry that continued until 4:30 or 5 a.m.

Saturday arrived — much too early for many — and brought with it not the best of weather but many of the bravest battled the elements. Many of us claimed that Jumper Gammon and Wild Bill Humphreys brought the clouds and finally rain from Boston as they flew in by chartered plane at 6:30 a.m. During the morning the remaining attendees arrived: Bill and Judy Blitzer; Walt and Margot Borden; Jim and Ellen Brayton; Frank and Tillie Gallagher; Guy and Betty Gilleland; Sherry and Julia Ing from Honolulu; Tom and Louise McNamara; John Reid; Art Schwartz now of the class of '47; Spence Standish; Art Le Croix; Bill and Elaine Shuman, Ed and Elinor Stoltz; Don and Jean Whitehead; Bud and Nina Wilson; John Maynard and Ken Mathews, '46. Two of the Saturday morning arrivals were Professor and Mrs. John B. Rae, our Institute guests. More about John later; we had hoped to have Professor and Mrs. F. Curtis Canfield of Yale University as guests as well, but the old Lieutenant of V-12 fame was attending his 30th Reunion at Amherst where he obtained an Honorary Degree that week-end.

About noon the clouds darkened and the rains came but not in sufficient quantities to postpone the afternoon festivities. We adjourned to a nearby school yard some two or three miles away for a good old beer bust with all the fixings. After lunch we had several games of dodge ball (J. J. Strand is most light on his feet in spite of his added tonnage) and a typical Crane's Beach baseball game with a bumper off on every base. Don't ask me who played what or why or who won; all I can say is that it was fun for all — spectators and players alike. Vince Butler was the losing pitcher but only because Bill McKay made a game saving shoe string catch shoulder high in the bottom half of the last inning — inning number three! Before adjourning to the Curtis a class picture was taken by several camera bugs; some of the pictures came out very well and a copy will be forwarded to all those that attended the reunion. Should any of you readers like a copy please let me know and a copy will be mailed to you at cost.

A class meeting was held prior to Saturday evening's social festivities; it probably would still be in session if the girls hadn't broken it up. Details of this meeting and subsequent Executive Committee decisions will be discussed in a later issue. Saturday's cocktail party was to be a "planned" two-drinks-a-piece affair but somewhere along the line our purser lost count! Cocktails were followed by a most informal class banquet. We were most fortunate to have two Executive scavengers on the committee in Dave Trageser and Tom Hewson for they competed amongst one another in the issuance of complementary gifts. We all received several paper bags from St. Regis and miscellaneous items from Dewey & Almy, the latter gifts being a rubber beach ball to each couple, several fourth hand meteorological balloons, as well as a plastic vegetable bag. The reunion token or remembrance piece was a silver tie clasp for the



boys and pin for the girls made up in the form of a circle with a straight T in the center with a 4 or 5 on either side. The pin was made under the supervision of Bill Shuman; Bill also selected our '45 crew hats.

The excellent dinner was followed by a most informal series of awards and gifts. Professor Rae enlightened us briefly on the many changes in curriculum at the Institute for which the reunion committee gratuitously awarded him a rubber ring to go with a most useful item provided him at our Senior Week Ball some ten years ago. Vince Butler and Sherry Ing received a roller skate apiece for traveling the furthest distance; Bud Hetrick received an "I'm a Beaver" bib for paying his class dues twice; Blanche Kircher was the recipient of several whistles for wanting the most children, and Chuck and Helen Marie Street had a second dessert for having put on the most weight as a couple since marriage. Yours truly gave a resume of the questionnaire completed by those attending the reunion; I shall save the results of this questionnaire for a later issue.

An informal record dance followed dinner and it was pleasing to note that some of the fellows could still dance.

Several of us put through a call to Nick Mumford in Texas but as one might suspect a profit was made on the deal. Tom Stephenson collected a 50 cents per head from all of those that spoke with Nick; Steve pocketed \$2.50.

As was the case the night before, sleep was again difficult but time and age had made its mark; many turned in early—2 a.m. However, Vince Butler kept a small group awake till 4:30.

At 7 o'clock Sunday—a damp dismal day—Vinnie Butler was romping the corridors with one of Blanche Kircher's whistles routing all out for breakfast and church. The morning hours were spent in worship, gab, or newspaper reading. Due to schedules, babysitters, etc., several found it necessary to leave before dinner, but for those of us that remained, dinner was a fitting climax to a most festive reunion weekend. We all left soon after lunch—some for Alumni Day in Boston, some for home, but all looking forward to our Fifteenth Reunion in 1960.

Since we were unable to attend Alumni Day festivities Ed Stoltz indicated the following were in attendance: Edgar Andrews, Julian Busby, Vince Butler, Frank Carroll, Curt Elliott, Homer Eckhardt, Dave Flood, Jay Forrester, Charlie Hart, Bud Hetrick, Pete Hickey, Roger Hood, Sing Leong, Sherry Ing, Louis Isenberg, Bill McKay, Bob Magathlin, Warren Miller, Phil Pocock, Thornton Smith, Spencer Standish, Ed Stoltz, Bill Shuman, Bob Turner, Jack Uretsky, Ed Washburn, Don Whitehead, and Dick Winkler. We have no details on Boston festivities except that Vince Butler did make his 7 o'clock plane to San Francisco.

Oh, Fran just reminded me that we still have a "reunion" shoe that no one has yet claimed. Are you missing a shoe?—CLINTON H. SPRINGER, *Secretary*, Hayden Publishing Company, 19 East 62nd St., New York, N.Y.

## • 1950 •

Just as was predicted in the spring issue of the Review, the fifth reunion at the Treadway Inn at Coonamesset was the biggest thing to hit Tech in quite some time. A total of 149 people attended some part of the weekend and partook of the festivities. Registration started about 10 o'clock Saturday morning and each guest was greeted by a glass of punch, a slap on the back, a hearty hello, a crazy hat, and a schedule of events guaranteed to please.

Lunch time brought the renewing of old acquaintances and the making of new friends. Although there was a light mist falling from up yonder it didn't dampen the spirits for the "beer baseball" game. Ralph Gretter and Pete Baker were the team captains in a game that saw home plate crossed a total of 38 times. Pete's team finally won the game in the ninth inning. The score was attributed more to faulty fielding than it was to fence busting batting. But what with a combination of suds, rain, and wet grass and "five years out" what more could we expect.

While the boys were playing their hearts out at the ball diamond the gals were taking a sightseeing tour of nearby Falmouth and Woods Hole. A cocktail party followed from 5 to 7 p.m. and then a banquet with thick roast beef and all the trimmings. An evening of frolic followed with dancing, games and lots of giveaways. Everybody came away with something. Everything from glass banks, pens, pencils, canned goods and dietetic rice krispies, to our grand prize of a Remington electric shaver, won by Ray Holloway. The music stopped playing at midnight at the main lodge but parties were going on all over the reservation at the individual cabins until the wee hours of the morning. Sunday brought a partial clearing in the weather and a chance to put the Tech sail boat in the water for a spin. There was a high wind blowing but it didn't help old sailors like Bob Master, Don McGuinness, or Toy McLeer from showing their talents on beautiful Coonamesset lake. The sun finally broke through the overcast at 1 p.m., just in time for the big clambake. And after eating till our heart's content the weekend was drawing to a close and it was time to say goodbye till the next time. Nothing but praise for the weekend as we said goodbye so the committee felt pretty good and settled back for four years before time to plan for the tenth reunion. The list of people attending was as follows: Karl Anstrand and Joan McNaught, Pete Baker, Diran and Judy Basmajian, Guy Bell, Bob Bissell, Mr. and Mrs. Don Bly, Jay Bedrick and Betsy Ann Dexter, Mr. and Mrs. Ara Barmakian, Mr. and Mrs. Jim Beach, Phil and Jean Byrne, Tom Cerwonka, Mr. and Mrs. Norm Champ, Charles and Marion Chittick, Ed Cohan, Nat and Collie Cook, Marty Cornish, Mr. and Mrs. Dick Counihan, John and Jean Craig, Mr. and Mrs. Ed Dmytryk, Jack and Gwen Downhill and their ten month old boy, Ray Oyba, wife and year old son, Ray Fitzmaurice, Dick Gnecco, Charles Govatsos, Don and Barbara Gray, Mal and Susan Green, Richard Green and

Nancy Condell, Burns Gregg, Ralph and Erna Gretter, Ralph Hall, Howard Hayden, Dick and Pat Henderson, John and Margery Hetherington, Ray Holloway, Jim Jensen, Carroll and Polly Johnson, Grover Kormann, Bob and Diana Kendall, Dick and Estelle Kret, George Krusen and Evi Keskkula, Charles and Helen Levy, Dave Levington, Herb Limmer, Dan and Peggy McGuinness, Bob McKittrick, Tom McLeer and Rosalind O'Brien, Joe and Katherine McCluskey, Charles and Mary Magarian, Mr. and Mrs. John Malloy, Claus Manasse, Bob Mann, Bill and Gloria Maroni, Bob Meisel and Joyce Parker, Don Miller and Barbara Cooks, Mr. and Mrs. Jack Mohr, Dave Mohr, Harold Moss, Mr. and Mrs. Harold Mulford, Bill and Marilyn Murphy, Bob and Lee Muzzy, Mr. and Mrs. Harvey Nickerson, Mr. and Mrs. John Nickerson, Mr. and Mrs. Bob O'Conner, Frank and Lola Parisi, Al Petrofsky, Bob and Lois Plouffe, Andy Price, Al Rader, Dr. and Mrs. Searle Rees, Mr. and Mrs. Ed Reidy, Lindsay Russell, Leo Sartori, Mr. and Mrs. Robert Snedeker, Myles Spector and Jan Schlusberg, Gabel Stilian, Russ and Anne Stott, Mr. and Mrs. Claude Tapley, Bill and Virginia Towles, Mr. and Mrs. George Twitchell, Bill and Jean Walther, Hal and Betty Weber, John Williams, Don and Marilyn Young, and Ruth and yours truly. Aaron Brody and George Barry from class of 1955 were also on hand as was Stan Turner class of '22 our class insurance agent. The majority called it a successful weekend and headed for home and the office on Monday morning. However, those who were able, journeyed up to Boston for Alumni Day. The festivities of the day were described in the Review last month. The Honor Roll of those attending follows: John Anson, Jay Bedrick, Norton Belnap, Tom Cerwonka, Margaret Coleman, Paul Cooper, Martin Cornish, Ray Dyba, Frank Ferrigno, J. Raymond Gaffey, Gregg Burns, Charles Grice, Bob Kendall, James Kennedy, Bob Mann, Jack Mohr, Andy Price, Searle Rees, Jesse Shearer, Thor Stromsted, John Willard, Bob O'Conner and Jack Weaver.

Have a happy New Year all of you and may it bring you health, happiness, and prosperity.—JOHN T. WEAVER, *Secretary*, 24 Notre Dame Road, Bedford, Mass.

## • 1951 •

This may be a bit premature—but your secretary does not know when you will receive the December issue—so: Merry Christmas to all men and women of ye olde Class of 1951. I hope that the Christmas season finds promotions, fat bonuses, joy and good cheer lavished on the hard-working '51ers. To play a bit of the Santa role, may I begin dispensing news items? Thank you, I will.

Marriage continues to attract more '51ers. Tom Veale and Eleanor Kirby were wed in Quincy in July. Ralph Scheidenhelm took Audrey Ross as his bride at Sudbury in August. Larry Schneck became engaged to Carolyn Fenn—no news as yet as to the date. Best wishes to you happy couples. By the way, as a veteran (?) of two years of marriage your secretary agrees with the

many, many '51ers who think that marriage is a wonderful institution!

A word about our reunion. As you know, the hard-working local and national committee is keeping you posted with up-to-date news on the reunion activity plans. So I shan't try to present information which may be dated due to our long lead time. But I do want to express my appreciation for the wonderful response we have received from the loyal '51ers. And thanks for the notes which came with your letters. They help so much in our efforts to make this column lively. Further notes are always welcome.

News Items: Dick Willard is working at Harvard University. Adolph Hendrickson is with Remington Rand—the name is very familiar in our industry. Berny Duane is located at Cincinnati with work centered in the Nuclear Analysis Unit at G.E. Lieutenant Earl Kletsky has received a fellowship from the Netherlands government for a year of research, teaching and study in the electrical engineering field at the Institute of Technology at Delft. Earl was assigned to the Air Force Research Center at Bedford during his tour of duty. After receiving his doctorate, John O'Donnell joined the Film Division of the Buffalo plant of E. I. Du Pont. John had received his M.S. in 1950 and in 1951 was assistant director of the M.I.T. Chemical Engineering Practice School at Bethlehem Steel Company's Lackawanna plant. Dan Maxfield pleased us with the following note: "As with most of the class, a lot has happened since the days of '51. I have been on active duty with the Air Force since graduation and have had several interesting assignments, including a year in Korea. After my return to the states, I married a Bostonian who had studied, including post-graduate work, at the New England Conservatory of Music. Alice and I have a 14-months-old son, Paul, who has taken a little of Alice's time from music though she still does some playing, teaching, organ, and choir work. My current assignment is Purdue Graduate School where I am at the half-way mark in a two-year program leading to a M.S.C.E. degree. I am still concentrating on building and foundation, but I'm including studies in highways and airports, soil mechanics and engineering geology." Thanks, Max! Dave Turnbull is now working for the Potomac Container Corp. at Baltimore. Bob Herman is Manager at the Federated Metals Divisions of the American Smelting and Refining Co. at Houston, Texas. Gerry Burns, as hard working as ever, finds the Cincinnati area too attractive to leave—he is at G.E. Mark Franklin (Lieutenant) is associated with the U. S. Naval Repair Facility at San Diego. Which reminds me—about ten years ago, your secretary was wandering around in that beautiful area. No offense to the Floridians in our group, but I'm still partial to California. Hope to get out there some day. Of course, Dan Sully helps the cause by the picture method at Christmas to show the palms and sunshine while we Easterners wallow in slush and much which is not here right at this moment but coming. Right now we have had a bit of water to swim through. By the way, your secretary had an interesting

time driving from New York on October 15th where he attended the Audio Fair. Ran into Marv Grossman, now Assistant Sales Manager of H. H. Scott. They could well be proud of the products they produce—but Techmen insist on quality and their products have IT. Marv filled me in on the latest reunion news which by the time you read this will be dated, for you will be receiving frequent news items from the committee.

Bob Gooch headed back to his small state—Texas. Bob is employed by Freese and Nichols at Fort Worth, Tex. Gene Graham is a Madison Avenue commuter where he works for California Texas Oil Co., Ltd. Charley Miller is at the M.I.T. Department of Civil and Sanitary Engineering. Orlo Powell is keeping busy as a private in the Army at the Aberdeen Proving Grounds, Md. From Montreal, Canada, Joe Amblard reports that he finds life very interesting and is keeping busy. Still single yet, Joe—I am surprised! Other news items: Peter Lang received his Sc.D. in Chemical Engineering at Tech this fall and joined the Shell Development Co. in Emeryville, Calif. Jim Pitcock, also Course X, received his M.D. from Washington University in St. Louis and is now interning at the Vanderbilt University Hospital in Nashville, Tenn. He is married to the former Cynthia de Haven of Paris, Tex. John Kalvinskas married Louann Adams of Olean, N. Y., late in August or early September and has gone back to school for another degree. Alve Erickson was recently appointed assistant professor in Mechanical Engineering at Tech. Mike Hoffman was also appointed assistant professor. He is in Aeronautical Engineering. Time to sign off for this issue. More news coming next time. Hope you all enjoy the holiday season. — STANLEY J. MARCEWICZ, *Secretary*, c/o The Lorraine, Route 2, Highland, N. Y.

## • 1953 •

Last month's Tech Review reported the address of Joan and Norman Gardner as Murray Hill, N. J. Since that time the Gardners have moved to 100 Memorial Drive in Cambridge, and Norman has a position with Nuclear Metals. Jul Greenebaum, after finishing his tour of duty with the Corps of Engineers in Japan, is starting the school routine again at the Harvard Business School.

A news clipping from last summer tells of the promotion to First Lieutenant of Dick Lockhart. Dick entered the service in October of '53 and served with a military government company at Camp Gordon, Ga. If he is another one of us "two-year men" he should be a "happy" civilian by now.

Norman Zabusky was one of four men recently awarded Howard Hughes Science Fellowships. Norman will study electronic computers at Cal Tech. M.I.T. can share in the distinction which another "migrant" to Cal Tech has won for herself. Miss Dorothy Semenow was the first woman to receive a degree from our rather formidable brother on the West Coast. Miss Semenow was awarded her Ph.D. in organic chemistry. Dr. Semenow received her undergraduate degree

from Mt. Holyoke College, then came to M.I.T. and from here she went on to Cal Tech.

We have two more weddings this month. The former Miss Sheila Sullivan and Ensign Raymond J. Boyd, Jr., were married at the Coast Guard Memorial Chapel in New London, Conn. Ensign Boyd was graduated from the Coast Guard Academy in 1954 and Mrs. Boyd graduated from St. Joseph College in the spring of this year.

Donald A. Gordon and Marjorie Anne Way were married in Melrose, Mass., on August 2. The Gordon's plan to live in Eatontown, N. J., until Donald finishes his Army tour at Fort Monmouth, N. J.

Another note from the M.I.T. of California—John Mathis, a grad student at Cal Tech, has been elected to associate membership in the Society of Sigma Xi. A reminder to those of you in the New York, Philadelphia, and Chicago areas who may have missed last issue of The Tech Review. The following men will serve as assistant secretaries for the aforementioned areas: Douglas Meyer, 6823 Dartmouth Street, Forest Hills, N. Y.; Ralph Anglin, 1081 South Clinton Avenue, Trenton, N. J.; and Brian Parker, RFD 3, Box 112, Barrington, Ill. — VINSON W. BRONSON, Jr., *Secretary*, 18 Mel-len Street, Cambridge, Mass.

## • 1954 •

Letter-writing seems to be a function of the weather. As the days get shorter and the cool air moves in, people break out their stationery and begin spreading the word. At least, that seems to be the case with the Class of 1954. After a long, dry summer, the letters are beginning to flow in to ye olde secretary, which is greatly appreciated, of course. Makes for a fuller, more newsy column. So keep the mail coming.

One of the epistles I received recently was from Otto Selinger, who now spells his name Sellinger. Otto is studying hard, to hear him tell it, at the Medical School of Tulane University down in New Orleans. He is also applying for citizenship, has gotten himself married, and is anxiously awaiting his first-born. Otto says that his wife is from Nicaragua, but doesn't mention her name. Speaking of weddings, I've received notices on quite a few which took place during the summer. Dick Miller married Ruth Glynn of North Quincy, Mass., on September 10. Dick, now Ensign Miller, and his bride are living in Brooklyn. Bob Fish and Barbara Manning wed the same day in South Braintree, Mass., and then headed for Alabama, where Lieutenant Bob is stationed with the Army. Kingsley Craft and Diane Phillips of Needham, Mass., took the plunge on June 18, and are now living in Boston. Archbishop Cushing of Boston married Victor Pesek and Dorothy Fraser of Wellesley on July 9. The Peseks are now living in New York City. Newtonville is the home of Bob Gilliland and the former Miss Ethel Hitchcock, who were married in Newton Center on June 25. Gerry Golden and Helen Pearlstein tied the knot in New York on June 12. Gerry and the Mrs. are now living in Troy, N. Y., where Gerry is teaching and studying at Rensselaer Polytechnic Insti-



tute. Tom Bastis and his bride of June 17, the former Miss Ruth Birch of Needham, are now keeping house in Oakland, Calif. Mike O'Neill was married to Helene Noble in Boston on July 16. And down in Macon, Ga., Sydney Balsbaugh and Helen Anderson promised to love and obey on September 9. Congratulations and best wishes to everybody.

Word has come through that Phil James has gotten himself a National Science Foundation scholarship to continue his studies at the University of Illinois. Phil is bucking for his Ph.D. Congratulations, Phil. Kudos are in order for Alex Lett, too, but for a different reason. Alex and Joan Gospodarek of North Adams, Mass., announced their engagement on August 20. Lieutenant Lett is currently serving Uncle Sam in Washington, D. C. Meanwhile, back at Fort Belvoir, Lieutenant Bill Hartrick is pursuing his military career. His wife, Mary, is holding down the home front in Methuen, Mass. And Lou Mahoney has been moved to the Army Chemical Center in Maryland where he is assigned to the Research and Engineering Command.

Dean Jacoby took some time off from his gold-bricking down in Oklahoma to send a few bits of gossip. Emil Krejci, according to our president, is wearing the Air Force Blue at Moffett Field. Warren Davis has some kind of soft job with the Civil Service in Washington, D. C. Pete Peterson is drawing his paycheck at the Goodyear Aircraft Corporation in Akron. Air Force Lieutenant Bert Beals pulled some strings and got himself stationed in his home town, Oklahoma City, where he is in the Tinker Air Force Base Directorate of Maintenance Engineering. Sounds good, anyway. Jim Klapmeier is, er . . . uh . . . well, Dean, old boy, your handwriting just isn't all it could be. As near as I can tell, Jim is in St. Paul, Minn., doing liaison work, I guess it is, between production and laboratory personnel for somebody. If you see this, Jim, drop me a line and clear up the situation, will you?

A few last minute items have come in. Pfc. Tony Ranti has headed toward Europe with the army. Lieutenant Stan Hoff has moved in the other direction, across the Pacific, for the same organization. John Blair is working at Pacific Semiconductors, Inc., in Culver City, Calif. Dick Wallace has moved from Great Neck to Glen Oaks Village, N. Y. I don't know what Dick is doing to kill time. And that's

about the end of the line for this month. Merry Christmas, Happy New Year, and keep the news coming. — EDWIN G. EIGEL, JR., *Secretary*, 3654 Flora Place, St. Louis 10, Mo.

## • 1955 •

Life at Tech hardly seems different this year than last. There is the same old hustle-bustle in the halls and the same old group of freshmen, although looking younger each year, going over to R.O.T.C. to get measured for rifles, and arriving at quizzes 8:30 A.M. so as to be sure to get a seat. To a surprising extent it seems that '55 has not left our sacred walls. This probably seems more evident to a Course VI man like myself because of all the IV-A men in their graduate year, but it seems that I see a new classmate of ours every time I walk the halls. But to you others out there in that thing we call the world — don't worry, we still miss you.

The mailbag gathered quite a few cobwebs this month, but once in a while a bright star appeared out of the blue. Tops in literary technique was a hectographed gem called "The Nasatir Newsletter" from guess who. In it were various bits of information (not in digital form, however), some of which we reproduce below.

"After a small family wedding at Marilyn's home we took off for California via the Badlands, the Black Hills, the Tetons, Yellowstone, Glacier, Lake Louise, Jasper, Spokane, Seattle, Chelalis (you guessed it — Elden Reiley), Portland and the Coast. Apartment hunting revealed that the evils of capitalism had spread even unto this Eden, but we managed to settle down, ever conscious of financial and distal limitations. Now that we're all settled, scrubbed, painted, and arranged, we're ready and anxious to receive word from anyone (we bought a brand new mail box)."

Anyone who would like to take Dave and Marilyn up on this can find them at 2271 El Camino Real in Palo Alto, Calif. In case you missed last month's class notes, they are both taking graduate work at Stanford.

The greatest bulk of the news, as you might all suspect, is the weddings and engagements.

On Sept. 3, Bob Kolenkow and Anitra Cross Bingham were married in Cambridge. Anitra is a graduate of Radcliffe College. On Sept. 9, they sailed to Ger-

many where Bob is now studying at Gotingen University on a Fulbright Fellowship.

Ron Howard and Polly Hathaway were married on the 17th of September in the M.I.T. Chapel. Polly will graduate in January from Simmons as a physical therapist. Ron is now studying for his Master's here at "Tech" on a fellowship. Also married in the Chapel were Bud Hebel and Jean Day in September. Bud is now here at Grad School working for the degree of Aeronautical Engineer.

In August, James H. Duffy and Mary Margaret Sheehan, of North Andover, Mass., were wed. After a honeymoon at Bermuda the couple settled in Niagara Falls, N. Y., where Jim is working for Du Pont.

Also in August was the marriage of Lawrence Hitchcock, and Margaret Willsey. Margaret is from Attleboro and studied at the Massachusetts General School of Nursing and Boston University. After a wedding trip to the Adirondacks, the couple settled here in Boston.

July 5th was the big day for Harry Wells and Beryl Sprinkle of West Harwich, Mass. They are now living in Jersey City, N. J., where Harry is with the Colgate-Palmolive Company.

Also in July was the wedding of James Tyler and Jean Ryder of Newton, Mass.

Robert Dettmer married Elenor Coburn of Bloomfield, Conn., and Wellesley College on August 20. Bob and Elenor took their wedding trip to the Laurentian Mountains and to the Chateau Frontenac in Quebec. They now live in Boston.

Douglas East and Barbara Ann Beal of Newton Center, Mass., and Middlebury College, were married in July. The honeymoon took them to New Hampshire and they are now residing in Cambridge while Doug attends Grad School.

In early October, John Wing and Barbara Barnett of Cedarhurst, N. Y., and Wellesley College, announced their engagement. John is now at the Harvard School of Business Administration.

Aside from this, news has been as scarce as hen's teeth. Please drop one of us a line and tell us what you are doing. Let it be said that in the class notes section of this well-esteemed organ, 1955 may be last but certainly not least. — DELL F. LANIER, *Secretary*, 3011 Vernon Place, Cincinnati 19, Ohio. L. DENNIS SHAPIRO, *Assistant Secretary*, Room 10-483, M.I.T.

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